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September 18, 1987

AT KEARNEY

CONFIDENTIAL

Mr. Mark Flachsbart
Regional Project Officer
U.S. Environmental Protection Agency
Region IX
215 Fremont Street, Sixth Floor
San Francisco, California 94105

Reference: EPA Contract No. 68-01-7374; A.T. Kearney Work Assignment No. R29-02-15; Whittaker Bermite Division; RCRA Facility Assessment

Dear Mr. Flachsbart:

Enclosed is the final RCRA Facility Assessment for the Whittaker Bermite Division facility located outside Saugus, California. This facility, which has been in this location since the late 1800s, has been owned by Whittaker since the 1960s. No file information or facility personnel interviews revealed any information concerning specific activities of the previous owners. Whittaker Corporation is trying to sell the Bermite facility and, as a result, demolished all buildings and equipment associated with the plant in early 1987. The only remaining structures on the property are the RCRA-regulated units and the administrative buildings. Thus, the VSI team was unable to view most of the SWMUs identified at this facility.

Thirty-four SWMUs were identified in the course of this assessment. Only the RCRA-regulated units physically remain on the property. Two of the RCRA surface impoundments were closed by the facility without approved closure plans. Whittaker is now conducting soil sampling in the vicinity of these impoundments to determine the extent and nature of contamination which may exist. Additional information has been requested for the Drum Rinsing Area (Unit 4.17) and the Lead Azide Wash Water Holding Tank (Unit 4.2). Soil sampling has been suggested for the Drum Storage Area near Building 342 (Unit 4.8).

Please do not hesitate to call the undersigned or Barb Morson, the Work Assignment Manager (who can be reached at 206/747-7899), if you have any questions.

Sincerely,

Lee A. Deets
Technical Director

Don R. Beasley
Program Director

Enclosure

cc: J. Walker, EPA Region IX
J. Grieve
J. Gers
B. Morson, SAIC-B

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RCRA FACILITY ASSESSMENT
BERMITE DIVISION
WHITTAKER CORPORATION
SAUGUS, CALIFORNIA

EPA I.D. No. CAD064573108

Submitted to:

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EPA Contract No. 68-01-7374
A.T. Kearney Assignment No. R29-02-15
SAIC No. 2-817-08-036-00

September 16, 1987

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EXECUTIVE SUMMARY

A RCRA facility assessment (RFA) was performed to identify and evaluate solid waste management units (SWMUs) and other areas of concern at the Whittaker Corporation, Bermite Division facility near Saugus, California. The RFA utilizes records review, data evaluation, interviews, and a visual site inspection to evaluate the potential for releases of hazardous wastes or constituents from SWMUs identified during the assessment. The records review was based on information obtained in the RCRA and CERCLA files of EPA Region 9, files and reports of the California Department of Health Services, and the Regional Water Quality Control Board, Los Angeles Region.

The Whittaker Corporation has been active at this site since October, 1967, manufacturing a wide variety of ordnance products for the Department of Defense. The facility ceased operations in 1986 as contracts were completed or transferred to other facilities, and began undergoing closure of process areas and waste management units. To date, 95% of the buildings have been demolished, although the RCRA-regulated waste management units remain onsite.

As a result of this assessment, 34 SWMUs were identifed at this facility. A SWMU of concern at this facility is the inactive RCRA-regulated waste solvent Surface Impoundment 317 (Unit 4.4). Results of soil sample analyses have indicated that soil contamination has resulted from previous use of this impoundment for spent solvent storage. These past soil releases are currently being addressed in the facility's soil characterization plan, hydrogeologic assessment plan, and groundwater monitoring plan. Possible past releases from RCRA-regulated Surface Impoundment 342 (Unit 4.7) are also addressed in the facility's soil characterization plan and hydrogeologic assessment plan.

Appropriate information on the construction, use, and operation of the Drum Rinsing Area (Unit 4.17) and the Lead Azide Holding Tank (Unit 4.2) was unavailable at the time of this review, so environmental release potentials from these units could not be adequately evaluated. Other SWMUs at the facility appeared to present no environmental release problems.

1.0 INTRODUCTION

The Whittaker Corporation, Bermite Division, owns and operates an ordnance manufacturing facility near Saugus, California. The facility has been operating under Interim Status since 1981. In 1986, the company decided to terminate production operations and close this facility since contracts were completed or transferred to other facilities. A Closure Plan for this facility was submitted to EPA in August, 1986, and a revised Closure Plan in May, 1987. To date, 95% of the buildings have been demolished, although the RCRA-regulated units remain onsite.

The 1984 RCRA amendments provided new authority to EPA to require comprehensive corrective action on solid waste management units (SWMUs) and other areas of concern at facilities applying for Part B operating permits or closure/post-closure permits and those with RCRA interim status. The intent of this authority is to address previously unregulated releases of hazardous constituents to air, surface water, soil, and groundwater, and the generation of subsurface gas. In order to accomplish this objective, a RCRA facility assessment is undertaken which consists of a preliminary file review, a site visit, and when warranted, sampling and analyses.

This report presents an evaluation of SWMUs at the Whittaker Corporation, Bermite Division facility and as such, summarizes the results of a records review, data evaluation, and visual site inspection performed on the facility. Primary sources of information utilized for this review include the facility's Closure Plan; RCRA and CERCLA files of EPA Region 9; and files and inspection reports at the California Department of Health Services (DOHS) and the California Regional Water Quality Control Board (RWQCB), Los Angeles Region. A visual site inspection was conducted at this facility on July 16, 1987 to verify file information and observe current conditions of the SWMUs.

Section 2.0 of this report describes the facility and its operations. In addition, a brief history of waste management practices and regulatory activ ties are provided. Section 3.0 provides an overview of the environmental

setting. The solid waste management units are individually described in detail in Section 4.0. Finally, Section 5.0 summarizes conclusions of environmental release potentials for these SWMUs.

2.0 FACILITY DESCRIPTION

2.1 GENERAL DESCRIPTION

The Whittaker Corporation, Bermite Division, owns and operates an ordnance manufacturing facility located at 22116 West Soledad Canyon Road, Saugus, California in Los Angeles County.(4) Site operations are spread over a large semi-rural area of approximately 1100 acres, with production units remote from each other and property lines.(3,22) The facility location is shown in Figure 1. Due to the sensitive and hazardous nature of the industry, access to the site is rigidly controlled, with entry allowed only through a single manned gate.(3)

The facility has been in operation for approximately 86 years, although Whittaker has only operated at the site since November, 1967.(22) At least three other companies have owned the site, but Whittaker officials were unable to supply any information regarding these firms and no information could be found in the files during this assessment. In 1986, Whittaker decided to terminate production operations and close this facility since contracts were completed or transferred to other facilities.(13) The facility began closing waste management units and demolishing buildings in late 1986. To date, approximately 95% of the buildings have been demolished.(5) The only structures remaining are the administrative buildings and RCRA-regulated storage and treatment units, which have been emptied and cleaned.(22)

2.2 SITE OPERATIONS

The Bermite division of Whittaker Corporation's ordnance manufacturing facility at Saugus, California produced explosives, propellants, flare, and ignitor products under contract to the Department of Defense. Bermite manufactured a wide variety of products, specializing in ordnance; thus waste streams and unit use changed with variation in these contracts.(3)

Information on early manufacturing processes and waste disposal activities prior to the time Whittaker aquired the site is unavailable. On August 6, 1985, Bermite submitted to the EPA Toxic and Waste Management Division a

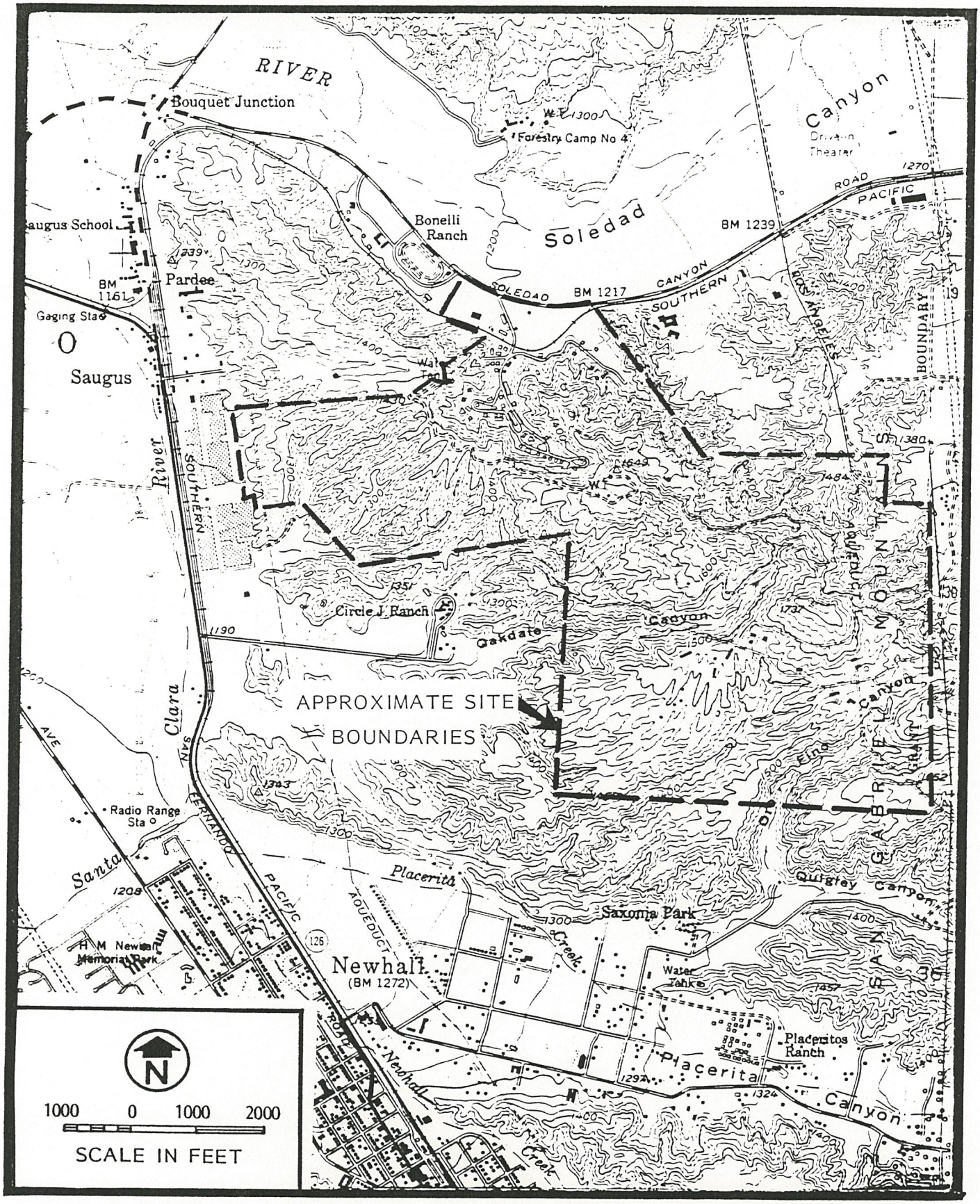

Figure 1

SITE LOCATION MAP OF WHITTAKER CORPORATION
SAUGUS, CALIFORNIA FACILITY
Source: USGS Topo. Map, Mint Canyon Quad

confidential listing of manufacturing processes which generated wastes in the past year.(2) The manufacturing processes, and hence wastes generated, were not necessarily used concurrently. The information only reflects manufacturing processes and wastes characteristic of Bermite, and is meant as a list of "possible processes and wastes that Bermite believes may occur as a result of its contract activities".(2) These included:

- Ignitor/explosive bolts/actuated devices manufacturing
- Powder charge manufacturing
- Rocket motor/gas generators/propellants manufacturing
- Primer manufacturing
- Pellet ignition boosters manufacturing
- Flare manufacturing
- Fuze/detonator manufacturing
- Glow plug/pyrophoric pellet/alco pellet manufacturing
- Ammo rounds manufacturing

This list only reflects some of the manufacturing processes characteristic of Bermite. The operations information was minimal, consisting of a list of steps for each process (e.g., weigh, blend, load, press, clean-up, performance testing).(2)

2.3 WASTE MANAGEMENT PRACTICES

The wastestreams produced by operations at the Saugus facility have included wash water from the rinsing of lead azide, liquid organic solvents that may or may not be contaminated with reactive powders, and stabilized red phosphorous mixed with small quantities of copper sulfate. Other wastes that have been identified are reject explosive components, explosive wastes, and explosives contaminated paper products and gloves.(5)

The August 6, 1985 listing of wastes generated included: ignitable and reactive powders and solvents; lacquers; thinners; contaminated paper, rags and tools; expanded test items; ammonium perchlorate/water; neutralized lead based salts; oakite stripper (used); resins; paint; sand; pyrotechnic mixed contaminated paper-Sealrite containers; and contaminated water (sodium-, aluminum-, cobalt-, and iron-sulfates).(2)

On-site treatment has gone through several stages of development since Bermite operations began. Up until 1983, the solvents and red phosphorous/copper sulfate waste streams were discharged to Surface Impoundments 317 and 342 (Units 4.4 and 4.7), prior to offsite disposal.(22) At that time the ponds were closed, and wastes were temporarily stored in the Tank Farm (Unit 4.5) prior to transportation by a registered waste hauler to a Class I facility.(5) Wash water from the rinsing of lead azide was originally collected in an concrete-walled sump with a soil base (Unit 4.3) up until 1978.(22) From 1978 until January, 1987, the rinse water had been undergoing treatment in the Lead Azide Wash Water Treatment System (Unit 4.1).(22)

The facility used open burning for the treatment and disposal of off-spec pyrotechnics, explosives, and propellants (PEP) wastes.(3,5) Various open burning devices were used for the different types of wastes and included a Burning Cage, Pans, and Rails (Unit 4.13) and Burn Pits (Unit 4.14).(22) A detonation range (Unit 4.16) was also used for PEP waste disposal.(22)

2.4 REGULATORY ISSUES

Bermite submitted a RCRA Part A Application to EPA in November, 1980, for container storage, treatment of wastes in surface impoundments, storage and treatment of wastes in tanks, as well as open burning of wastes.(5) The Part A was further amended in 1985 to reflect changes in waste volumes and closure of two surface impoundments.(3) The facility operates under EPA ID No. CAD 064573108.(5)

The facility received interim status on September 9, 1981, although no groundwater monitoring requirements were placed in the ISD.(1,9) At the time, phosphorous processing and solvent wastewaters were discharged to two separate surface impoundments. Due to requirements imposed upon the facility for implementing a groundwater monitoring program for the two surface impoundments in early 1983, the facility decided to close these impoundments.(11)

A closure plan for the phosphorus Surface Impoundment 342 (Unit 4.7) was submitted to the DOHS in September, 1983 but written approval was never given by the agency.(11,15) The facility began closure activities for this

impoundment in October, 1983.(11) No formal closure plan was submitted for the waste solvent Surface Impoundment 317 (Unit 4.4), which was closed by the facility in March, 1983.(3,11,22)

During a June, 1985 inspection, EPA found Bermite in violation of 40 CFR 265 requirements regarding the closure activities of Surface Impoundment 317.(3) On June 4, 1986 EPA issued a Determination of Violation Compliance Order.(7,24) As a result of this Administrative Order, a Consent Agreement and Final Order was signed between EPA and Bermite on August 26, 1986, requiring the company to prepare a Soil Characterization Plan for the Surface Impoundment 317 area in order to demonstrate that the closure activities conducted in 1983 were adequate and in compliance with 40 CFR 265.228 requirements.(1,24,25,26) A Soil Characterization Plan and a revised Closure Plan for all RCRA units had been submitted on August 7, 1986 before finalization of the Consent Agreement and Final Order.(7,14)

EPA reviewed the Soil Characterization Plan and determined that the 1983 closure activities of Surface Impoundment 317 did not result in clean closure of the surface impoundment as required in 40 CFR 265.228.(25) In addition, the Soil Characterization Plan was not approved by DOHS.(16) As a result of these inadequacies, Bermite was required to submit a revised Closure Plan, Soil Characterization Plan for both surface impoundments, Hydrogeologic Assessment Plan for both surface impoundments, and a Groundwater Monitoring Plan for Surface Impoundment 317.(26) These plans were submitted to EPA and DOHS on May 1, 1987.(5)

A memorandum from DOHS to the California Regional Water Quality Control Board, Los Angeles Branch, on December 31, 1986 stated that most of the SWMUs at the Bermite Division had been closed, and the only units in operation at that time were storage containers, tank treatment and some tank storage.(9) Bermite has not used open burning since the Air Quality Management Board (AQMB) prohibited that practice in January, 1985.(1,22) The company's consultant, in a January 1987 letter to DOHS, stated that facility operations had ceased, about 80% of the facility had been demolished, and the property had been sold for development.(1) The revised Closure Plan, submitted in May, 1987, indicated that 95% of the facility had been demolished.(5)

The Bermite Division has had numerous regulatory problems over unauthorized hazardous waste unit closures. Bermite claims they have voluntarily closed SWMUs, before being required to do so, because they believed it was the environmentally sound and appropriate thing to do, and with the understanding that they had complied in excess of government guidelines.(11) Correspondence and memorandums verify they have been in contact with appropriate agencies, but have consistently carried out closure activities without written closure permits.(12)

2.5 SOLID WASTE MANAGEMENT UNITS

The following solid waste management units (SWMUs) have been identified at the Bermite Division of Whittaker Corporation's Saugus facility, and are numbered as they appear in this report. These SWMUs are shown in Figure 2 and listed below:

- Unit 4.1 Lead Azide Wash Water Treatment System - RCRA Regulated (Four Tanks)
- Unit 4.2 Lead Azide Wash Water Holding Tank
- Unit 4.3 Old Lead Azide Processing Building and Sump (Two Units)
- Unit 4.4 Surface Impoundment 317 - RCRA Regulated
- Unit 4.5 Tank Farm (Three Tanks)
- Unit 4.6 Drum Storage Unit (Near Building 317)
- Unit 4.7 Surface Impoundment 342 - RCRA Regulated
- Unit 4.8 Drum Storage Unit (Near Building 342)
- Unit 4.9 Three Steel Portable Magazines - RCRA Regulated
- Unit 4.10 Three Wooden Portable Magazines - RCRA Regulated
- Unit 4.11 Waste Pyrotechnic Magazine (Building 236) - RCRA Regulated
- Unit 4.12 Waste Pyrotechnic Magazine (Building 223) - RCRA Regulated
- Unit 4.13 Burning Cage, Pans, and Rails - RCRA Regulated (Three Units)
- Unit 4.14 Two Former Burn Pits - RCRA Regulated
- Unit 4.15 Three Open Burning Area Storage Bunkers

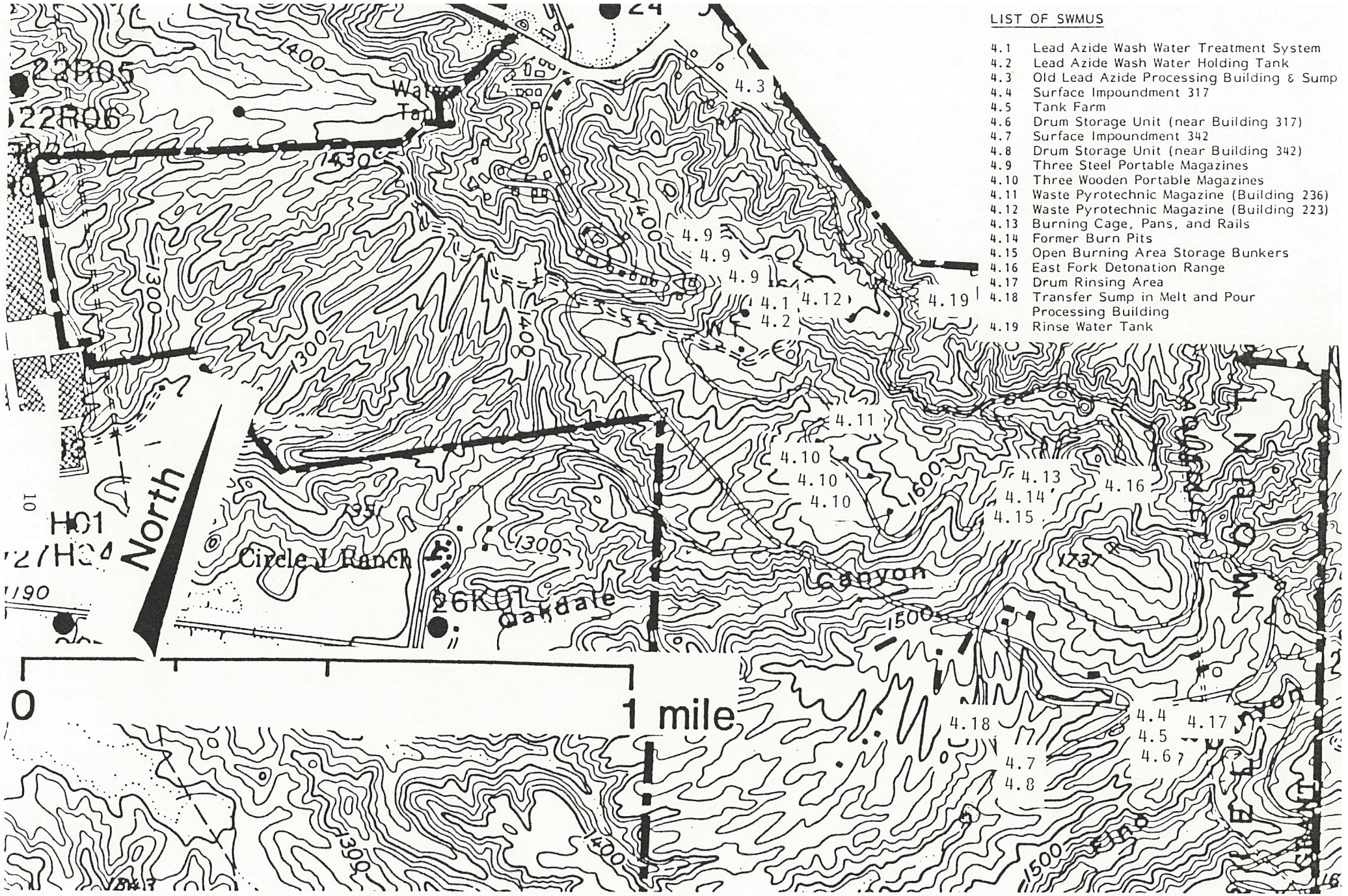

Figure 2

LOCATION MAP OF SWMUS AT WHITTAKER CORPORATION, SAUGUS, CALIFORNIA FACILITY
Source: Reference 5

Unit 4.16 East Fork Detonation Range - RCRA Regulated

Unit 4.17 Drum Rinsing Area

Unit 4.18 Transfer Sump in Melt and Pour Processing Building

Unit 4.19 Rinse Water Tank

3.0 ENVIRONMENTAL SETTING

3.1 LOCATION AND SURROUNDING LAND USE

The Bermite Division of Whittaker Corporation's Ordnance Manufacturing Facility is located at 22116 West Soledad Canyon Road, Saugus, California.(13) Site operations are spread over a large semi-rural area, with production unit operations remote from each other and property lines.(3) Site boundaries enclose an area of approximately 1100 acres (Figure 2).(5)

The Bermite facility is located in the Santa Clara River Basin near the northwestern limits of the San Gabriel mountains.(14) The northern boundary meets Soledad Canyon Road. The western boundary parallels the Southern Pacific Railroad and the community of Saugus. To the south lies Saxona Park and the community of Newhall. The eastern portion of the site falls within the foothills of the San Gabriel mountains.(27)

The area in the immediate vicinity of Bermite is sparsely populated. The communities of Saugus and Newhall, several ranches, a forestry camp, drive-in theatre, and boy's camp are located around the property.

3.2 TOPOGRAPHY AND METEOROLOGY

Site topography is highly varied, with a divide running generally east-west through the site. Drainage north of the site enters Soledad Canyon. Drainage south of the divide would enter either Oakdale Canyon or Oro Fino Canyon (Figure 1). Soledad Canyon, on the north edge of the site, has an elevation of approximately 1200 feet.(14) Elevations in the western and southern portions of the site range between 1300 and 1700 feet MSL. The southeast corner of the site has sharper features, with elevations ranging between 484 and 1600 feet MSL.

Climate conditions in the site vicinity are characterized by hot, dry summers and cooler rainy winters. Rainfall averages 13 to 17 inches per year; evapotranspiration greatly exceeds precipitation. Site specific wind data are not available. Regional winds blow predominantly from the west and north. Site topography, especially in the canyons, undoubtedly modifies this wind regime.

3.3 SURFACE WATER

The eastern Santa Clara River Basin, which lies directly north of the site, and several unnamed creeks were the only surface water identified in the site vicinity.(15) A major bend of the Santa Clara River is found north and west of the site (Figure 1), thus drainage both north and south of the divide may enter the river via small streams. The topography suggests that with sufficient rainfall, water could rapidly flow down to the canyons and other areas of low elevation, to cause flash flooding.

3.4 GEOLOGY AND HYDROLOGY

The Bermite facility is located in the Santa Clara River Basin near the northwestern limits of the San Gabriel Mountains. The San Gabriels are a complex uplifted fault block, generally considered to be thrust over the Los Angeles basin to the south, and bounded on the north by the San Andreas fault along the southern edge of Antelope Valley.(14)

The northern portion of the Bermite facility, north of the San Gabriel fault, is underlain by sedimentary beds of the Saugus Formation, except for the thin alluvial floors of two small north draining canyons. The water table is approximately 20 feet below the surface of Soledad Canyon, on the north edge of the site.(14) The Saugus Formation consists of up to 2,500 feet of continental sand, clay, and poorly cemented gravel of Pleistocene Age.(15)

Most of the area of the facility south of the San Gabriel Fault is underlain by fine-to-coarse-grained poorly to well cemented sand and gravel beds. These beds are underlain, probably at very shallow depth, by the Saugus Formation, according to Bermite's consultant.(14) Beneath valley areas, the Saugus Formation is overlain by up to 100 feet of alluvial sand and gravel with some clay and silt. Groundwater depth in this area generally ranges from 70 to 80 feet. The groundwater gradient is generally towards the southwest.(15) Groundwater occurrence in formations other than alluvium is undoubtedly very irregular due to variations in infiltration capacity and permeability of the sedimentary materials, variations in dip, and faulting.(14)

Soil exposed on the ground surface are silty sand and clayey sand and are in a loose to dense condition.(15)

3.5 GROUNDWATER MONITORING AND SOIL CHARACTERIZATION

Bermite conducted a soil sampling program in June, 1986 at the former location of Surface Impoundment 317. Five samples were taken to a depth of 10 to 12 feet, using a back-hoe to dig pits for four of the samples and drilling through a concrete slab to obtain the fifth sample. A background sample was taken 100 feet away, in an area thought to be free from any contamination source. Three of the pits were located on areas generally downgradient from the former impoundment, and the fifth sample was taken in the center of the site.(14) In February, 1987, DOHS indicated to Whittaker that the sampling plan and analytical results generated were believed inadequate, and is requiring the facility to prepare and undertake a sampling plan in accordance with specific regulatory requirements.(16)

The ISD issued to Bermite in 1981 did not contain groundwater monitoring requirements. Following closure of the Surface Impoundments 317 and 342 in 1983, EPA required that a groundwater monitoring program be initiated at the site.(17) A revised Closure Plan submitted to the EPA in April 1987 provides for a monitoring well program.(5)

Currently, the only known well on the site is located on the south side of Soledad Canyon Road, adjacent to and west of the Saugus Speedway, and approximately 1/4 mile east of Bouquet Junction.(18) This is a production well mainly used for fire protection purposes.(15) Sampling indicated the presence of organic solvents; specifically 1,1-dichloroethylene, freon 113, chloroform, carbon tetrachloride, and trichloroethylene.(15,18) However, concentrations detected were in the low parts per billion range.(15,18)

4.0 DESCRIPTION OF INDIVIDUAL UNITS

4.1 LEAD AZIDE WASH WATER TREATMENT SYSTEM (Four Tanks)

4.1.1 Information Summary

Unit Description: These RCRA-regulated units are located adjacent to Building 207, near the junction of Photoflash Road and Azide Road, and cover an area 60 feet long by 25 feet wide (Figure 2). The units are four aboveground open-topped stainless steel tanks located inside a concrete containment structure.(6) Each tank is approximately four feet long by six feet wide by three feet high, has a capacity of 540 gallons, and is constructed on a concrete foundation.(6) Tanks are designated by the facility as A, B, C, and D.(6) The tanks had a treatment capacity of 1,232 gallons.(4) They were operated in a batch mode; each batch took three days to complete treatment.

The treatment units collected and neutralized wash water from the processing of lead-based initiating explosive compounds.(6) The treatment process was actually a stabilization process to render the wastes non-explosive.(22) These wash waters were generated in Building 207 and piped to the treatment tanks.(22) Two types of wash waters were produced from these processes: lead azide wash water and lead styphnate wash water.(6)

Lead azide wash waters were gravity fed via a trough from Building 207 to Tank A.(4,6,22) The water was treated with ceric ammonium nitrate to neutralize the lead azide.(4,6) Products of this reaction included lead salts, ceric hydroxide, nitric oxide, and nitrogen.(6) The wash water was transferred to Tank B, checked for lead azide and pH, and adjusted, if necessary, to between pH 6 and pH 8 by addition of sodium hydroxide.(4,5) The stabilized water was then transferred to the two lower tanks (Tanks C and D).

The lead styphnate wash water was gravity fed to Tank A where sodium hydroxide, air, and atomized aluminum were added to reduce the lead styphnate and neutralize the initiating explosive.(6) A color analysis was performed to verify that the reaction was completed and if complete, the water was transferred to

Tank B.(6) In Tank B the pH was checked and adjusted, if necessary, with hydrochloric acid.(4) Once neutralized, the wash water was transferred to Tanks C and D.(6)

The stabilized wash waters in Tanks C and D were then directly pumped out and transferred to an offsite hazardous waste disposal facility or to the Tank Farm near Building 317 (Unit 4.5), with ultimate disposal to an offsite licensed hazardous waste facility.(4,5,22)

Date of Startup: The treatment units commenced operation in November, 1978, after the catastrophic loss of the old Lead Azide Processing Building and Sump (Unit 4.3).(6,22)

Date of Closure: This treatment operation became inactive in January, 1987.(1,9,22) These treatment tanks have been addressed in the facility's Revised Closure Plan dated April, 1987, although the facility is currently awaiting DOHS approval of this closure plan before conducting final closure activities of these tanks.(22)

Wastes Managed: The tanks treated wash water from the processing of lead-based, initiating explosives compound.(6) Two types of wastes, lead azide wash water and lead styphnate wash water, were produced from these processes.(6) Lead azide and lead styphnate are primary explosives that are very sensitive to low energy inputs such as heat, friction, impact, shock, or electrostatic energy.(23) Lead azide has a drop test of one-half inch.(22)

Release Controls: All tanks were situated aboveground on concrete pads, were open top, and could be entered for inspection.(6) Tanks A and B were each surrounded by an outer steel containment tank with a capacity of 900 gallons.(6) Tanks C and D were surrounded by a concrete containment structure 9.54 ft x 18.4 ft x 2.67 ft high, and 6 inches thick.(6) The containment had a continuous concrete floor which was impervious to wastewater and had a capacity of 3500 gallons.(6) Run-on was prevented by a containment wall surrounding all four tanks, the base of which was 2.5 feet higher than ground level.(6) According to the facility there were no bypass or pressure controls for tank feedlines; all were operator controlled.(6)

History of Releases: In the revised RCRA Closure Plan dated April, 1987, the facility indicated that since the wastes treated "were very sensitive", the company "is confident that no spillage took place, and cleaning was performed very meticulously".(5) There was no file evidence of releases from this unit. In addition, no indications of leaks or spills was observed during the VSI.(22)

The facility is currently conducting soil sampling underneath the concrete pad to determine if any releases have occurred.(22) Wipe sampling of the tanks and containment structures has also been done to ensure that no releases have occurred.

4.1.2 Conclusions

Groundwater Release Potential: Based on the unit's construction and secondary containment, and on the operational precautions taken to prevent spillage, there was a very low potential for past releases to soil and groundwater from these tanks. There is no ongoing potential for releases to soil and groundwater as this unit is inactive and has been emptied and cleaned out.

Surface Water Release Potential: The potential for past surface water releases was very low based upon the unit's construction and secondary containment, and on the operational precautions taken to prevent spillage. There is no potential for ongoing releases to surface water as the unit is inactive and has been emptied and cleaned out.

Air Release Potential: There was a potential for past air releases by evaporation from these tanks as they were open to the atmosphere. The tanks are inactive, emptied, and cleaned out and as a result, there is no potential for ongoing air releases from this unit.

Subsurface Gas Release Potential: There was no potential for the past generation of subsurface gas from this unit based upon the inorganic nature of the wastes and the nature of the unit's design. There is no ongoing potential for the generation of subsurface gas as this unit is inactive.

4.2 LEAD AZIDE WASH WATER HOLDING TANK

4.2.1 Information Summary

Unit Description: This holding tank was located downgradient and adjacent to the Lead Azide Wash Water Treatment System (Unit 4.1). The tank was a fiberglass boat hull mold framed with tubular steel, with an operational capacity of 1000 gallons.(6,22) The tank was at grade level and supported on its sides with packed soil.(6)

The intended use of this holding tank is unclear, although the facility indicated that this tank may have been used as a catch basin for runoff or overflows from the lead azide treatment area.(22) The final disposition of the collected wastewaters is also unknown.

Date of Startup: The exact startup date of this unit is unknown.

Date of Closure: This holding tank was taken out of service and removed from the site in 1986.(22)

Wastes Managed: The types of wastes that may have been collected in this unit include runoff and overflow from the adjacent lead azide wash water treatment system.(22) Although chemical analyses of the wastewaters collected in this particular tank are unavailable, it is unlikely that these wastewaters contained any appreciable amounts of lead azide or lead styphnate based on the secondary containment of the lead azide wash water treatment system and on the operational precautions taken to prevent release of these wastes from this system.

Release Controls: There were no known release controls for this unit.

History of Releases: There was no file evidence of release from this unit. In addition, no indications of spills or overflows were observed during the VSI in the area formerly occupied by this tank.

4.2.2 Conclusions

Groundwater Release Potential: There was a low potential for past soil and groundwater releases even though this tank had no release controls. There is no potential for ongoing releases as the tank has been removed from the site.

Surface Water Release Potential: There was a low potential for past releases to surface water from this tank, even though there is a lack of tank release controls. The tank has been removed from the site, and as a result, there is no ongoing potential for surface water releases.

Air Release Potential: Even though this unit was open to the atmosphere, there was a low potential for past air releases. There is no ongoing air release potential as the tank has been removed from the site.

Subsurface Gas Release Potential: Based on the inorganic nature of the wastes potentially present in the tank, there was no potential for the past generation of subsurface gas from this unit. There is no potential for the ongoing generation of subsurface gas as this unit has been removed from the site.

4.3 OLD LEAD AZIDE PROCESSING BUILDING AND SUMP

4.3.1 Information Summary

Unit Description: This unit was located on the northeast end of the facility property adjacent to Photoflash Road (Figure 2).(22) The unit was a portable building mounted on skids and constructed of a 12 ft by 16 ft wood frame, wood roof, corrugated steel sides, and plywood floor.(22)

Lead-based initiating explosive compounds, such as lead azide, were processed in this building. The wash waters generated from this operation were discharged into an concrete-walled sump with a dirt base adjacent to the building.(22) The building and sump operated for a 20 year period until an explosion occurred on October 31, 1978, which resulted in a personnel fatality and destruction of these units. The explosion was a result of waste accumulation in the sump.(22)

As a result of the explosion, the lead azide washing operations were transferred to the current location of the lead azide wash water treatment system (Unit 4.1). For safety purposes, the sump was carefully cleaned out and backfilled. Soil samples were collected in the sump area and also in the drainage area below the sump during April, 1986. Analytical results of the soil samples using EP toxicity test procedures, showed lead concentrations below 0.05 mg/l.(22)

Date of Startup: The unit was placed into operation in approximately 1958.(22)

Date of Closure: The lead processing operations ceased operation in this area on October 31, 1978, as a result of a catastrophic explosion.(22)

Wastes Managed: Wash waters generated from the processing of lead azide were managed in this unit.(22)

Release Controls: There were no known release controls for this unit. It is unknown if the sump was covered.

History of Releases: There was no file evidence of releases from this unit. In addition, no indications of spills or overflows were observed in this area during the VSI.

4.3.2 Conclusions

Soil/Groundwater Release Potential: The sump was designed for releases to the soil. There was a potential for past releases to groundwater based on the design of the sump and depth to groundwater ranging from 70 to 80 feet. This unit is no longer in existence, and soil sampling has indicated no significant contamination, therefore, there is no ongoing potential for releases to soil and groundwater.

Surface Water Release Potential: Based on the design of the sump and proximity to surface water, there was a low potential for past releases to surface water. There is no ongoing potential for release to surface water as the unit no longer exists.

Air Release Potential: It is unknown if the sump was covered, therefore, the potential for past releases to air cannot be adequately evaluated. There is no ongoing release potential to air as the unit is no longer in service and the sump has been backfilled.

Subsurface Gas Release Potential: Based upon the inorganic nature of the wastes managed in this unit, there is no potential for the past or ongoing generation of subsurface gas.

4.4 SURFACE IMPOUNDMENT 317

4.4.1 Information Summary

Unit Description: This RCRA-regulated unit is located on the southeast end of the facility adjacent to Phosphorus Road (Figure 2). This unit was designated as Surface Impoundment 317 due to its location next to Building 317.(5) This Hypalon-lined surface impoundment was approximately 50 ft x 50 ft with an operational depth of 2 to 3 ft and a capacity of approximately 30,000 to 35,000 gallons.(4,6,22)

The surface impoundment was used to collect and store waste organic solvents generated from onsite manufacturing operations, which were contaminated with reactive materials.(4,5) When inflow rates exceeded evaporation rates, the contents of the impoundment were pumped out and transported to an an approved offsite disposal facility.(22) Thus, the quantities and frequency of wastes disposed offsite were a function of production rates and evaporation rate.(22)

The surface impoundment was closed in March, 1983 and all wastes and waste residues removed, manifested, and transported to an approved Class I, offsite hazardous waste disposal facility via a registered hauler.(11,12) The liner was inspected for damage and possible leakage at this time and was then removed and transported to the Class I disposal facility.(11) The liner was found to be undamaged.(11) The area surrounding the impoundment was inspected by facility personnel, although no visible signs or evidence of contamination were observed. A soil sample was also collected by facility personnel at this time from the center of the impoundment at a depth of ten to eleven feet below the bottom and analyzed for total and chlorinated hydrocarbons.(11)

Based on the results of this analyses, the facility determined that no contamination resulting from the use of this impoundment had occurred.(11) After these closure activities, the area was concrete paved and the Tank Farm (Unit 4.5) was constructed over the site.(3) No discrete closure plans or soil analysis results were submitted to EPA.(3) In addition, these closure activities were not certified by an independent registered engineer.(3,12)

Due to DOHS and EPA concerns over the adequacy of the closure procedures in meeting state and federal requirements and adequacy of the soil characterization to determine if contamination has occurred, EPA issued a Determination of Violation Compliance Order on June 4, 1986.(1,24) As a result of this Administrative Order, a Consent Agreement and Final Order was signed by EPA and Whittaker on August 26, 1986. This settlement required that Whittaker submit a closure plan and soil characterization plan in order to demonstrate compliance with appropriate RCRA regulations (40 CFR 265).(1,24,25) The Consent Agreement allowed the facility the opportunity to demonstrate that the closure activities conducted in 1983 were adequate and in compliance with 40 CFR 265.228.(25,26) While the Consent Agreement and Final Order was being finalized, Whittaker submitted a Closure Plan dated August 7, 1986, and a soil characterization plan on August 19, 1986.(7,14) Analytical results from soil sampling conducted in June, 1986 were also submitted.(14,25)

EPA reviewed the soil sampling plan and analytical results and determined that the 1983 closure activities did not result in clean closure of the surface impoundment as required in 40 CFR 265.228.(25) DOHS also reviewed the soil characterization plan and determined it was inadequate.(16) As a result, a revised closure plan addressing additional closure requirements was required to be submitted by the facility. In addition, soil characterization for both surface impoundments 317 and 342, a hydrogeologic assessment of the sites below both surface impoundments 317 and 342, and a groundwater monitoring program for Surface Impoundment 317 were to be initiated.(26) A revised closure plan, soil characterization plan, hydrogeologic assessment plan, and groundwater monitoring plan were all submitted to EPA and DOHS on May 1, 1987.(5)

Date of Startup: The surface impoundment was placed into service in the early 1970's.(22)

Date of Closure: The surface impoundment was closed on March 8, 1983.(11,22) At that time, a concrete pad and tank farm (Unit 4.5) were constructed over the unit, although these were removed in January, 1987.(22)

Wastes Managed: The surface impoundment was used to collect and store waste organic solvents contaminated with reactive materials prior to manifesting for offsite treatment and disposal.(4,5) A list of hazardous wastes possibly stored at the former Surface Impoundment 317 was submitted in the April, 1987 Revised Closure Plan and is presented in Table 1.(5)

Release Controls: The surface impoundment was Hypalon lined and had a leak detection system.(5,6,22) The leak detection system was positioned below the liner and consisted of a one-foot deep trench down the middle of the surface impoundment with a perforated pipe covered with sand and gravel.(6,22) The pipe was connected to a dry box to detect moisture.(6)

History of Releases: Hazardous constituents were found in soil samples collected from the impoundment area at levels higher than designated background soil samples.(16,26) The area formerly occupied by the surface impoundment and later by the tank farm (Unit 4.5) has been regraded so visual indications of leaks or overflows from the surface impoundment, if any, could not be readily observed during the VSI.(22)

4.4.2 Conclusions

Groundwater Release Potential: Results of soil sampling and analyses have indicated that there has been soil contamination resulting from the use of the surface impoundment. Based on this finding, there was a high potential for past releases to groundwater. As soil contaminants are still present, there is an ongoing potential for releases to groundwater.

Surface Water Release Potential: Based on the operational procedures to prevent overflow, there was a low potential for surface water releases. As this unit is no longer in existence, there is no ongoing potential for release to surface water.

Air Release Potential: The surface impoundment was designed for air releases by evaporation. There is no ongoing release potential to air, as this unit no longer exists.

Table 1

HAZARDOUS WASTES POSSIBLY STORED
AT THE FORMER SURFACE IMPOUNDMENT 317

Waste	RCRA Code
Acetone	F003
Methyl ethyl ketone	F005
1,1,1-trichloroethane	F002
Methylene chloride	F002
Trichloroethylene	F002
Tetrachloroethylene	F002
Toluene	F005
Total xylenes	F003
Ethyl benzene	F003
Styrene	No Code
Decane	No Code
Undecane	No Code
Arsenic	D004
Barium	D005
Cadmium	D006
Chromium	D007
Lead	D008
Silver	D011

Source: Reference 5

Subsurface Gas Release Potential: Based on the results indicating that soil contamination has occurred, there is both a past and ongoing low potential for the generation of subsurface gas.

4.5 TANK FARM (Three Tanks)

4.5.1 Information Summary

Unit Description: The Tank Farm was located on the site of the former solvent Surface Impoundment 317 (Unit 4.4) (Figure 2). The Tank Farm consisted of three, aboveground storage tanks on a concrete pad with a concrete-walled dike.(20,22) One tank had a capacity of 11,000 gallons and the other two tanks each had a 32,000 gallon capacity.(15) Tanks were cleaned two to three times a year and waste hauled offsite to an approved hazardous waste disposal site.(15) Additional operational details for this tank farm were unavailable at the time of this review.

Date of Startup: The tank farm was built in March, 1983, when Surface Impoundment 317 was closed.(22)

Date of Closure: The tank farm was taken out of service on December 19, 1985, at which time the contents of the tanks were pumped out and transported to an approved offsite disposal facility.(22) The tanks were disassembled and removed from the site by a buyer in September and October, 1986.(22) The concrete pad was removed on January 5, 1987.(22) The tanks and pad were removed without an approved closure plan.(16)

Wastes Managed: The tank farm was used to temporarily store wastes that formerly were held in the surface impoundments, such as spent solvents and red phosphorus wastes.(15,20) These wastes were stored for less than 90 days, and shipped offsite by a registered hauler to an appropriate hazardous waste disposal site.(3,22)

Release Controls: The tanks were underlain with a diked concrete pad.(20,22) Dimensions of the pad and dike are unknown at this time.

History of Releases: There was no file evidence of releases from this tank farm, however soil contamination from the past use of Surface Impoundment 317 has occurred in this area. Since the tanks and pad had been removed, indications of past releases due to leaks or spills could not be readily observed during the VSI.

4.5.2 Conclusions

Groundwater Release Potential: There was a low potential for past releases to soil and groundwater which were minimized by the presence of diked concrete pad. There is no ongoing potential for releases to soil and groundwater as this tank farm is no longer in existence. However, soil contamination from the past use of the former Surface Impoundment 317 (Unit 4.4) has occurred in this area.

Surface Water Release Potential: Based on the diked concrete pad, there was a low potential for past releases to surface water from this unit. As this unit is no longer in existence, there is no ongoing potential for surface water releases from this tank farm.

Air Release Potential: Based on the closed construction of the tanks, there was a very low potential for past air releases. There is no ongoing potential to air, as this tank farm is no longer in existence.

Subsurface Gas Release Potential: Based on the aboveground construction and diked concrete pad, there was no potential for the past generation of subsurface gas from this unit. As this unit no longer exists, there is no ongoing potential for the generation of subsurface gas.

4.6 DRUM STORAGE UNIT (Near Building 317)

4.6.1 Information Summary

Unit Description: This unit was located near Building 317 on the southeast end of the facility, adjacent to Phosphorus Road (Figure 2).(4,22) This storage unit was approximately 12 ft x 12 ft and consisted of four corner posts, a wood roof, open sides, and curbless concrete pad.(3,22) The unit had a storage capacity for 49 55-gallon steel drums.(4)

This unit served as a staging area for 55-gallon drums containing wastes generated from the various onsite manufacturing operations. These wastes were transferred from the manufacturing areas to this staging area on a frequent basis, often daily basis. At this staging area, a facility waste specialist would verify the drum contents, insure that the drums were properly labelled, and determine the final offsite disposition of the wastes.(22) The drums were stored in this staging area for less than 90 days.(22)

Date of Startup: This drum storage unit became active in the mid 1960's.(22)

Date of Closure: This drum storage unit was taken out of service in February, 1987. At that time the entire structure was removed from the site.(22)

Wastes Managed: The specific types of wastes stored in this unit were not made available by the facility for this review.

Release Controls: The storage unit had a curbless concrete pad and wooden roof.(3)

History of Releases: There was no file evidence of releases from this unit. During an EPA inspection in June 1985, drums in the storage area bearing labels other than the reported actual drum contents were noted, although no leaking drums were observed.(3) The area formerly occupied by the storage structure was inspected during the VSI; no indications of spills or leakage were observed.

4.6.2 Conclusions

Groundwater Release Potential: There was a moderate potential for past releases to soil and groundwater from this unit due to the lack of curbing around the concrete pad. As this unit is no longer in existence, there is no ongoing potential for releases to soil and groundwater.

Surface Water Release Potential: There was a low potential for past releases to surface water based on the waste handling practices of this unit, and the distance (over 2000 ft to surface water). There is no ongoing release potential as the unit is inactive.

Air Release Potential: The potential for past releases to air was reduced by the containment of the wastes in drums. There is no ongoing potential for air releases as this unit is no longer in existence.

Subsurface Gas Release Potential: Although the specific types of wastes stored in this unit are unknown to adequately evaluate the potential for the past generation of subsurface gas, the unit's concrete pad would have minimized this potential. There is no ongoing potential for the generation of subsurface gas as this unit is no longer in existence.

4.7 SURFACE IMPOUNDMENT 342 (Stabilized Red Phosphorus)

4.7.1 Information Summary

Unit Description: This RCRA-regulated unit was located on the southeast end of the facility, adjacent to Phosphorus Road (Figure 2). The unit was designated as Surface Impoundment 342 due to its location next to Building 342.(5) This Hypalon-lined surface impoundment was approximately 50 ft x 100 ft and divided into two cavities.(22) The total capacity of the impoundment was approximately 70,000 gallons.(4,6) Only one of the cavities received direct discharges of wastewater, the other collected overflow from the first.(22) The surface impoundment was used to collect and store stabilized red phosphorus prior to manifesting for off-site treatment and disposal.(5,22)

A closure plan was submitted to DOHS for this impoundment on September 9, 1983.(11,15) Closure activities began in October, 1983, at which time, all wastes and waste residues were removed, manifested, and transported to an approved Class I, offsite hazardous waste disposal facility via a registered hauler.(11) The liner was inspected for damage and possible leakage at this time and then removed and transported to the Class I disposal facility.(11) The liner was found to be undamaged.(11) The area surrounding the impoundment was inspected by facility personnel, althouth no visible signs or evidence of contamination were observed. Three soil samples were also collected by facility personnel.(11) One sample was collected at the center of the east cavity at three feet deep. Another was collected at the center of the west cavity at 2.5 feet deep.(11) A background sample was also collected at a point 100 feet south of the impoundment.(11) All samples were analyzed for phosphate, lead, and sulfate.(11) No phosphate was detected in the samples. (11) Lead and sulfate were not found to be above background concentrations. (11)

Based on the results of these analyses, the facility determined that no contamination had occurred from the use of this impoundment.(11,15) After completion of these closure activities, a concrete pad was constructed over the site which was to be used as a drum storage unit (Unit 4.8).(3,6) Although a closure plan was submitted for this surface impoundment, the closure activities were not certified by an independent registered engineer.(3,12)

DOHS reviewed the closure activities associated with Surface Impoundment 342 and determined that the unit was adequately closed.(8) However, EPA required the facility to submit a soil characterization plan and site hydrogeologic assessment plan for this surface impoundment and include this unit in the facility's revised closure plan, as part of the follow-up actions taken in response to the Consent Agreement and Final Order issued for Surface Impoundment 317.(26) The revised facility closure plan, which included this surface impoundment, soil characterization plan, and site hydrogeologic assessment plan were all submitted to EPA and DOHS on May 1, 1987.(5)

Date of Startup: The surface impoundment was placed into service in the mid 1960's.(22)

Date of Closure: The unit was closed in October, 1983.(11) Wastes were removed and shipped to an off-site Class I facility via a registered waste hauler at that time.(4) Upon completion of the surface impoundment closure activities, a drum storage area (Unit 4.8) was constructed over the site.(22)

Wastes Managed: The pond was used to collect and store stabilized red phosphorous and small quantities of copper sulfate prior to manifesting for off-site treatment and disposal.(4,11) In the red phosphorus stabilization operation, a heating tank was used in a cooking process which utilized sulfuric acid.(11) The heating tank coils were made of lead, and as a result, lead, sulfate, and phosphorus were components of the waste stream generated from this operation.(11)

Release Controls: The surface impoundment was Hypalon lined and had a leak detection system.(6,22) The facility has indicated that the liner has been repaired in the past due to burning by dried out phosphorus.(22) The leak detection system was positioned below the liner and consisted of a one-foot deep trench down the middle of the surface impoundment with a perforated pipe covered with sand and gravel.(6,22) The pipe was connected to a dry box to detect moisture.(6,19)

History of Releases: There was no file evidence of releases from this surface impoundment. The area formerly occupied by this impoundment, and later by the

drum storage unit (Unit 4.8), has been regraded so visual indications of leaks or overflows from the surface impoundment, if any, could not be readily observed during the VSI.(22)

4.7.2 Conclusions

Groundwater Release Potential: Based on the operation and release controls for this impoundment, there was a moderate potential for releases to soil and groundwater. There is no ongoing potential for releases to soil and groundwater, as this unit is no longer in existence.

Surface Water Release Potential: The potential for past releases to surface water was low based on the operation and construction of this unit. There is no ongoing potential for release to surface water as this unit is no longer in existence.

Air Release Potential: There was a potential for past air releases by evaporation to have occurred from this impoundment. As this unit is no longer in existence, there is no ongoing release potential to air.

Subsurface Gas Release Potential: Based on the inorganic nature of wastes managed in this impoundment, there was no potential for the past generation of subsurface gas from this unit. This unit no longer exists, and as a result, there is no ongoing potential for the generation of subsurface gas.

4.8 DRUM STORAGE UNIT (Near Building 342)

4.8.1 Information Summary

Unit Description: This drum storage unit was located near Building 342 on the southeast end of the facility adjacent to Phosphorus Road (Figure 2).(5,22) The unit was constructed over the site of the former red phosphorus surface impoundment (Unit 4.7). The storage unit consisted of a 130 ft x 80 ft reinforced concrete pad surrounded by a 2 ft high x 6 in thick concrete containment wall.(22) The storage unit had a capacity for 800 55-gallon drums.(4) The concrete pad was sloped to one end where the containment wall had capped drainage pipes. The drainage pipes were opened during rainfall events to allow for drainage to the outside of the containment wall.(22) Drainage went to the adjacent ground surface and percolated into the soil.

This unit stored drummed spent solvents generated from onsite manufacturing operations, which may have contained reactive powders.(5,22) Before shipment to an offsite disposal facility, the contents of each drum were checked for the presence of reactive solids and filtered as necessary. Various filter cloths, including one-micron synthetic fabric filters were used for this filtering process. Any resulting solid residues were collected and transported offsite to an approved disposal facility.(22) The drums were stored in this area for less than 90 days.(3,22)

Date of Startup: The concrete pad was poured during the fall of 1983.(11) However, this drum storage unit was not placed into service until January, 1986.(10)

Date of Closure: The unit was taken out of service in January, 1987, when the concrete pad was removed.(22)

Wastes Managed: Drummed spent solvents, which may have contained reactive powders, were stored in this unit.(5,22) These spent solvents may have included hexane, cyclohexane, methyl ethyl ketone, and acetone.(22)

Release Controls: The storage unit had a reinforced concrete pad and containment wall. In addition, the drums were stored on pallets.(22)

History of Releases: There was no file evidence of release from this unit. No indications of releases were observed in the area previously occupied by this unit during the VSI.

4.8.2 Conclusions

Groundwater Release Potential: The potential for past releases to soil and groundwater were minimized by the concrete pad and containment wall, although releases to the soil may have occurred as a result of opening the drainage pipe during rainfall events. If soil contamination occurred while the unit was active, there is a moderate potential for ongoing releases to groundwater.

Surface Water Release Potential: There was a high potential for past releases to surface water during rainfall events due to the unit's drainage system. During dry weather, however, the concrete pad and containment wall minimized the potential for surface water releases. There is no ongoing potential for surface water releases as this storage unit no longer exists.

Air Release Potential: Although the storage unit was open to the atmosphere, the drums were capped, which would have reduced the potential for past air releases. There is no ongoing potential for air releases as this unit is inactive.

Subsurface Gas Release Potential: There was a low potential for the past generation of subsurface gas based on the unit's concrete pad and containment wall. The storage unit is no longer in existence, and as a result, there is no ongoing potential for the generation of subsurface gas.

4.9 THREE STEEL PORTABLE MAGAZINES

4.9.1 Information Summary

Unit Description: These RCRA-regulated units are located on the north end of the facility, adjacent to Azide Road (Figure 2).(5,22) The steel magazines are each 16 feet long, 8 feet wide, and 7 feet high, and lined with plywood.(5,22) These units, designated as 502, 504, and 506, were identical to other onsite steel magazines used to store explosive manufacturing materials and products.(5,22)

These three particular steel magazines were designated to temporarily store containerized explosive wastes prior to burning in the open burning area (Units 4.13 and 4.14) or transfer to an offsite disposal facility.(5,22)

The magazines became inactive in 1986, when the remaining wastes in the units were shipped offsite to a permitted facility.(22) The magazines were inspected and steam cleaned in accordance with DOD-approved decontamination procedures to ensure that no explosive residues remained. Residues and steam cleaning wastewaters were collected and transported to an approved offsite treatment facility. The facility is currently awaiting DOHS approval of the Closure Plan before conducting final closure activities for this unit, including wipe testing for magnesium and offsite removal of the storage magazines to another explosives manufacturer who purchased the steel magazines.(5,22)

Date of Startup: The exact date of startup for these magazines is unknown.

Date of Closure: The steel magazines became inactive in 1986.(5,22)

Wastes Managed: The steel magazines were used to store off-spec flare mix, rocket mix, rocket propellant, and BP-1 powder.(5,22) The major component of these wastes was magnesium.(5) Table 2 lists the other components of each of these particular wastes.

Release Controls: The wastes were stored in bags which were place inside ammo cans.(5) The facility has indicated that because of the explosive nature of these wastes, they were confident that no spillage occurred.(5)

Table 2

MATERIALS AND THEIR MAJOR COMPONENTS
USED AT THE RCRA UNITS

Material	Components
Rocket Propellant	Magnesium oxide Ferric oxide Sulfur Ammonium perchlorate P-Quinone-dioxide Butyl carbitol Diphenyl-guanidine Lead dioxide Silica
Flare Mix	Magnesium Viton Teflon
BP-1 Powder	Nitro cellulose Dibutyl phthalate Diphenylamine Potassium nitrate Boron
Lead Azide	Lead Azide Ceric ammonium nitrate

Source: Reference 5

History of Releases: There was no file evidence of release from these steel magazines. There were no indications of spillage observed during the VSI.

4.9.2 Conclusions

Groundwater Release Potential: Based on the containment and waste handling practices for these particular wastes, there was a very low potential for releases to soil and groundwater. There is no ongoing potential for releases to soil and groundwater as these steel magazines are inactive.

Surface Water Release Potential: There was a very low potential for surface water releases from these magazines based on the containment and waste handling practices for the wastes. The steel magazines are inactive, and as a result, there is no ongoing surface water release potential.

Air Release Potential: Based on the containment and waste handling practices of these wastes, there was a very low potential for air releases from these units. There is no ongoing potential for release to air as these units are inactive.

Subsurface Gas Release Potential: There was a low potential for the generation of subsurface gas, based on the containment and waste handling practices of these wastes. There is no ongoing potential for the generation of subsurface gas, as these magazines are inactive.

4.10 THREE WOODEN PORTABLE WASTE EXPLOSIVE MAGAZINES

4.10.1 Information Summary

Unit Description: These RCRA-regulated units are located in the central portion of the facility, along Lower Magazine Road (Figure 2).(5,22) These magazines are constructed of wood with a corrugated aluminum shell.(22) The three magazines vary in dimensions, one is 14 ft x 8 ft x 10 ft high, another is 10 ft x 10 ft x 9 ft high, and the other is 8 ft x 12 ft x 8 ft high.(5,22) These three particular wooden magazines were designated to temporarily store containerized explosive wastes prior to burning in the open burning area (Units 4.13 and 4.14) or transfer to an offsite disposal facility.(5,22)

The magazines became inactive in 1986, when the remaining wastes in the units were shipped offsite to a permitted facility.(22) The magazines were inspected and steam cleaned in accordance with DOD-approved decontamination procedures to ensure that no explosive residues remained. Residues and steam cleaning wastewaters were collected and transported to an approved offsite treatment facility. The facility is currently awaiting DOHS approval of the Closure Plan before conducting final closure activities for this unit, including wipe testing for magnesium and offsite removal of the storage magazines to another explosives manufacturer who purchased them.(5,22)

Date of Startup: The exact date of startup for these magazines is unknown.

Date of Closure: The wooden magazines became inactive in 1986.(5,22)

Wastes Managed: The wooden magazines were used to store off-spec flare mix, rocket mix, rocket propellant, and BP-1 powder.(5,22) The major component of these wastes was magnesium.(5) Table 2 lists the other components of each of these particular wastes.

Release Controls: The wastes were stored in bags which were place inside ammo cans.(5) The facility has indicated that because of the explosive nature of these wastes, they were confident that no spillage occurred.(5)

History of Releases: There was no file evidence of release from these wooden magazines. There were no indications of spillage observed during the VSI.

4.10.2 Conclusions

Groundwater Release Potential: Based on the containment and waste handling practices for these particular wastes, there was a very low potential for releases to soil and groundwater. There is no ongoing potential for releases to soil and groundwater as these wooden magazines are inactive and no wastes remain in them.

Surface Water Release Potential: There was a very low potential for surface water releases from these magazines based on the containment and waste handling practices for the wastes. The wooden magazines are inactive and no wastes remain, and as a result, there is no ongoing surface water release potential.

Air Release Potential: Based on the containment and waste handling practices of these wastes, there was a very low potential for air releases from these units. There is no ongoing potential for release to air as these units are inactive and no wastes remain.

Subsurface Gas Release Potential: There was a low potential for the generation of subsurface gas, based on the containment and waste handling practices of these wastes. There is no ongoing potential for the generation of subsurface gas, as these magazines are inactive and no wastes remain.

4.11 WASTE PYROTECHNIC STORAGE MAGAZINE (BUILDING 236)

4.11.1 Information Summary

Unit Description: This RCRA-regulated storage magazine is located in the central portion of the facility, adjacent to Rocket Road.(5,22) The magazine is also designated as Building 236 and is 40 ft x 20 ft x 12 ft high.(5,22) The building is a concrete block structure with corrugated aluminum siding and roof, and has a design capacity of 30,000 pounds per 370 cubic yards.(4,5,22) The magazine was used to store dry waste propellant prior to burning in the open burning area (Units 4.13 and 4.14).(5,22)

The magazine became inactive in 1986, when the remaining wastes in the unit were shipped offsite to a permitted facility.(22) The magazine was inspected and steam cleaned in accordance with DOD-approved decontamination procedures to ensure that no explosive residues remained. Residues and steam cleaning wastewaters were collected and transported to an approved offsite treatment facility. The facility is currently awaiting DOHS approval of the Closure Plan before conducting final closure activities for this unit, including wipe testing for magnesium and demolition of the building.(5,22)

Date of Startup: The actual startup date of this unit is unknown.

Date of Closure: The magazine became inactive in 1986.(22)

Wastes Managed: Waste dry waste propellants, such as off-spec flare mix, BP-1 powder, and rocket propellant, were stored in this magazine.(5,22) Table 2 lists the major components of these wastes.

Release Controls: The wastes were stored in bags which were place inside ammo cans.(5) The facility has indicated that because of the explosive nature of these wastes, they were confident that no spillage occurred.(5)

History of Releases: There was no file evidence of release from this building. There were no indications of spillage observed during the VSI.

4.11.2 Conclusions

Groundwater Release Potential: Based on the containment and waste handling practices of these particular wastes, there was a very low potential for releases to soil and groundwater. There is no ongoing potential for releases to soil and groundwater as this magazine is inactive and no wastes remain.

Surface Water Release Potential: There was a very low potential for surface water releases from this magazine based on the containment and waste handling practices for the wastes. Building 236 is inactive, and no wastes remain, and as a result, there is no ongoing surface water release potential.

Air Release Potential: Based on the containment and waste handling practices of these wastes, there was a very low potential for air releases from this unit. There is no ongoing potential for release to air as this magazine is inactive and no wastes remain.

Subsurface Gas Release Potential: There was a low potential for the generation of subsurface gas, based on the containment and waste handling practices of these wastes. There is no ongoing potential for the generation of subsurface gas, as this magazine is inactive and no wastes remain.

4.12 WASTE PYROTECHNIC MAGAZINE (BUILDING 223)

4.12.1 Information Summary

Unit Description: This RCRA-regulated storage magazine is located on the north end of the facility, adjacent to Photoflash Road.(5,22) The magazine is also designated as Building 223 and is 40.5 ft x 21 ft x 14 ft high.(5,22) The building is constructed of a concrete floor, wood frame with corrugated aluminum siding and roof, with overhead and pedestrian doors.(5,22)

The magazine was used to store fiber drums containing Valstat bags of dry explosives, contaminated paper, and gloves.(5,22) These wastes were stored in this magazine prior to burning in the open burning area (Units 4.13 and 4.14) or shipping to an approved offsite hazardous waste disposal facility.(5,22)

The magazine became inactive in 1986, when the remaining wastes in the unit were shipped offsite to a permitted facility.(22) The magazine was inspected and steam cleaned in accordance with DOD-approved decontamination procedures to ensure that no explosive residues remained. Residues and steam cleaning wastewaters were collected and transported to an approved offsite treatment facility. The facility is currently awaiting DOHS approval of the Closure Plan before conducting final closure activities for this unit, including wipe testing for magnesium and demolition of the building.(5,22)

Date of Startup: The actual startup date of this unit is unknown.

Date of Closure: The magazine became inactive in 1986.(22)

Wastes Managed: Paper and gloves contaminated with flare mix, rocket propellant, or BP-1 powder were stored in this magazine.(5,22) Table 2 lists the major components of these wastes.

Release Controls: The contaminated paper and gloves were stored in Valstat bags (non-spark producing plastic) which were place inside fiber drums.(5,22) The facility has indicated that because of the explosive nature of these wastes, they were confident that no spillage occurred.(5)

History of Releases: There was no file evidence of release from this building. There were no indications of spillage observed during the VSI.

4.12.2 Conclusions

Groundwater Release Potential: Based on the containment and waste handling practices of these particular wastes, there was a very low potential for releases to soil and groundwater. There is no ongoing potential for releases to soil and groundwater as this magazine is inactive and no wastes remain.

Surface Water Release Potential: There was a very low potential for surface water releases from this magazine based on the containment and waste handling practices for the wastes. Building 223 is inactive and no wastes remain, and as a result, there is no ongoing surface water release potential.

Air Release Potential: Based on the containment and waste handling practices of these wastes, there was a very low potential for air releases from this unit. There is no ongoing potential for release to air as this magazine is inactive and no wastes remain.

Subsurface Gas Release Potential: There was a low potential for the generation of subsurface gas, based on the containment and waste handling practices of these wastes. There is no ongoing potential for the generation of subsurface gas, as this magazine is inactive and no wastes remain.

4.13 BURNING CAGE, PANS, AND RAILS (Three Units)

4.13.1 Information Summary

Unit Description: These RCRA-regulated units were located in the open burning area in the central portion of the facility (Figure 2).(5,22) Burning devices in the open burning area included an expanded metal cage, three steel pans, and four steel rails.(4,5) Two burn pits (Unit 4.14) and three storage bunkers (Unit 4.15) were also located in the open burning area.(4) The open burning area had a design capacity to treat 600 pounds of material per week and store 90 cubic yards.(4) Burning activities in this area were regulated by the South Coast Air Quality Management District.(5)

The metal cage was 10 ft long x 10 ft wide x 7 ft high and used to burn contaminated paper and gloves collected from the manufacturing operations at the end of each work shift.(5) The three steel pans were each 31 inches long x 26 inches wide x 2 inches deep and used for burning wastes containing fine pieces of powders.(5) The four steel rails were used to burn off-spec flare pellets and loose powders and were each 20.5 ft long x 3 inches deep.(5)

Date of Startup: These burning devices were placed into service in the 1970's.(22)

Date of Closure: These units became inactive in January, 1986.(22) The cage, pans, and rails were removed from the site by a scrap dealer between November, 1986 and March, 1987.(22) Prior to removal, ash was collected from these burning devices and shipped to an approved offsite disposal facility.(5) The units were then flashed with an open flame, which is the prescribed DOD method of decontamination of equipment.(5)

Wastes Managed: Pyrotechnic, explosive, and propellent (PEP) waste materials to be burned were collected from manufacturing operations at the end of each work shift, and transported to the open burning area for storage in the bunkers (Unit 4.15) prior to burning.(4,5)

Damp or dry wastes (e.g., explosively contaminated paper, cardboard boxes, and gloves) were placed in the metal burn cage for open burning.(4) Small amounts of reject flare pellets and loose powders were placed in the steel rails for

treatment by open burning.(4,5) Pans were used to burn waste ignition mix from process operations, such as off spec flare mix, rocket propellent, and BP-1 powder.(4,5) The main component of these wastes was magnesium.(5) In addition, reactive solids residue from drum bottoms and residue filtered from drummed waste solvents was absorbed with muslin sheets and spread on the pans for drying and burning.(3)

Release Controls: There were no release controls associated with these units.(22)

History of Releases: The facility's Environmental Protection Manual indicates that some materials release toxic fumes when being destroyed by burning.(21) The facility indicated that because of the explosive nature of the wastes, they were confident no spillage of these wastes had occurred.(5) No indications of spills or other releases were observed during the VSI.(22)

Soil samples were collected from each of the areas where these units were located and analyzed for EP Toxicity metals and reactivity as part of the units' closure activities. The soil samples contained metal concentrations below the EP Toxicity limits and exhibited no reactivity properties.(5) Currently, additional soil sampling is being conducted in the area formerly occupied by the burning cage as specified in the unit's closure plan.(5)

4.13.2 Conclusions

Groundwater Release Potential: There was a low potential for past releases of metals and reactive components to soil and groundwater. However, recent soil sampling results indicate that hazardous components in the ashes, specifically metals and reactive components, have not accumulated in the soil over time. There is no ongoing release potential to soil and groundwater as these units have been removed from the site, and no soil contamination has been documented.

Surface Water Release Potential: Recent soil sampling results have indicated that hazardous components in the ashes, specifically metals and reactive components, have not accumulated in the soil over time. Based on this, there was a low potential for past releases to surface water via runoff. As these units have been removed from the site, there is no ongoing potential for releases to surface water.

Air Release Potential: There was a high potential for past releases of toxic fumes from these burning activities as indicated by the facility. There is no ongoing potential for air releases as burning activities have ceased and the units have been removed from the site.

Subsurface Gas Release Potential: There was a low potential for the past generation of subsurface gas based on the nature of the wastes handled and recent soil sampling results indicating that hazardous components in the ash, specifically metals and reactive components have not accumulated in the soil over time. As these units are no longer at the site, there is no ongoing potential for the generation of subsurface gas.

4.14 FORMER BURN PITS (Two Units)

4.14.1 Information Summary

Unit Description: These RCRA-regulated units were located in the open burning area in the central portion of the facility (Figure 2). One of the burn pits was 50 ft x 25 ft, the other 40 ft x 30 ft.(5) These burn pits were used to burn various pyrotechnic, explosive, and propellent (PEP) wastes.(4,5) PEP wastes were loaded into the pits and ignited remotely.(5) These areas were covered with two to three feet of soil in 1983 and have not been used since.(5)

Ash was periodically generated from these burning operations, although in relatively small quantities due to the nature of the burns which were more like "flashes" occurring for less than 2 minutes.(22) The ash was periodically hauled offsite, but facility personnel could not provide details during the VSI as to where the ash was disposed.(22)

Date of Startup: The exact date of startup is not known for this unit.

Date of Closure: The two former burn pits were closed in 1983, and covered with two to three feet of soil.(5,22)

Wastes Managed: Various PEP wastes, such as contaminated paper and gloves, were burned in these pits.(4,5)

Release Controls: The burn areas were protected by berms on three sides.(5) There was no detailed information available regarding the construction of these berms.

History of Releases: The facility's Environmental Protection Manual indicates that some materials release toxic fumes when being destroyed by burning.(21) Subsurface soil samples were collected from each of the two areas formerly occupied by these burn pits and analyzed for EP Toxicity metals and reactivity as part of the units' closure activities. The soil samples contained metal concentrations below the EP Toxicity limits and exhibited no reactivity properties.(5) Currently additional soil sampling is being conducted in the two areas formerly occupied by the burning pits as specified in the unit's closure plan.(5)

4.14.2 Conclusions

Groundwater Release Potential: There was a low potential for past releases to soil and groundwater, based on recent soil sampling results indicating that hazardous components in the ash, specifically metals and reactive components, have not accumulated in the soil over time. There is no ongoing release potential to soil and groundwater as these units are no longer in use.

Surface Water Release Potential: Recent soil sampling results have indicated that hazardous components in the ash, specifically metals and reactive components, have not accumulated in the soil over time. Based on this, there was a low potential for past releases to surface water via runoff. As these units are inactive, there is no ongoing potential for releases to surface water.

Air Release Potential: There was a high potential for past releases of toxic fumes from these burning activities as indicated by the facility. There is no ongoing potential for air releases as the units have been taken out of service.

Subsurface Gas Release Potential: There was a low potential for the past generation of subsurface gas based on the nature of the wastes handled and recent soil sampling results indicating that hazardous components in the ash, specifically metals and reactive components have not accumulated in the soil over time. As these units are inactive, there is no ongoing potential for the generation of subsurface gas.

4.15 THREE OPEN BURNING AREA STORAGE BUNKERS

4.15.1 Information Summary

Unit Description: Three storage bunkers were located in the open burning area (Figure 2) and were designated as the wet, dry, and Seal-Rite storage bunkers.(4) The bunkers stored PEP wastes generated from manufacturing operations prior to burning in the open burning devices (Unit 4.13) or the burn pits (Unit 4.16).(4) Construction details of these storage bunkers were unavailable for this review.

Date of Startup: The startup dates of these units are unknown.

Date of Closure: It is unknown when these units were taken out of service. These bunkers were not on the site at the time of the VSI.(22)

Wastes Managed: The wet waste storage bunker provided temporary containment of process wastewater and wash water containing paper debris, waste flare pieces and powders, and PEP powders from manufacturing process liquids that have been collected and transported in plastic containers.(4) The metal Seal-Rite waste storage bunker was used to store empty PEP-contaminated Seal-Rite cardboard containers, which are used in manufacturing operations to store raw materials such as pyrotechnic powders.(4) PEP-contaminated combustibles (e.g., paper, plastic, and cloth) from various manufacturing processes were collected in plastic containers at the end of each shift and transported to the dry storage bunker.(4)

Release Controls: The contaminated wastes were placed in plastic containers prior to storage in the bunkers.(4)

History of Releases: There was no file evidence of releases from these units.

4.15.2 Conclusions

Groundwater Release Potential: Although specific operational details for these particular storage bunkers were unavailable at the time of this review, the operation and management of wastes in these bunkers was probably similar to that of other storage units on site due to the explosive nature of these

wastes. Based on these waste management practices, there was a low potential for past releases to soil and groundwater. As the units have been removed from the site, there is no ongoing potential for soil or groundwater releases.

Surface Water Release Potential: Based on general waste management practices at the facility for explosive wastes, there was a low potential for past releases to surface water. There is no ongoing potential for surface water releases as the bunkers have been removed from the site.

Air Release Potential: There was a low potential for past air releases based on general waste management practices at the facility for explosive wastes. There is no ongoing release potential to air as the units have been removed from the site.

Subsurface Gas Release Potential: Based on general waste management practices at the facility for explosive wastes, there was a low potential for the past generation of subsurface gas from these units. As these units have been removed from the site there is no ongoing potential for the generation of subsurface gas.

4.16 EAST FORK DETONATION RANGE

4.16.1 Information Summary

Unit Description: The east fork detonation range is a RCRA-regulated unit located in the northeastern portion of the facility, adjacent to Ridge Road (Figure 2).(22) The range was approximately 50 feet long by 20 feet wide, and used for detonating waste off-spec small explosive devices.(5,22) The unit was design to handle approximately 30 pounds net explosive weight (N.E.W.) per event, and a maximum of five events per week.(4)

In a detonation event, three holes were dug serially to a depth not exceeding six feet. Each hole was loaded with the off-spec explosive components, which were packed in Seal-Rite paper containers, and a small booster charge and covered with soil. The loading in each hole did not exceed 10 pounds N.E.W. The materials were then detonated remotely.(4,22) No excavation activities have ever been conducted at this detonation range.(22)

Date of Startup: The exact startup date of this unit is unknown.

Date of Closure: The unit was taken out of service in October, 1984.(12) This detonation range has been addressed in the facility's Revised Closure Plan dated April, 1987, although the facility is currently awaiting DOHS approval of this closure plan before conducting final closure activities of this unit.(22)

Wastes Managed: Off-spec explosive components, containing unknown hazardous constituents, were detonated in this range.(4,22)

Release Controls: There are no known release controls for this unit.

History of Releases: There was no file evidence of releases from this unit. The facility had collected soil samples in two different areas within this detonation range. At each location, two subsurface soil borings were taken and analyzed for EP Toxicity metals and reactivity. The soil samples contained metal concentrations below the EP Toxicity limits and exhibited no reactivity properties.(5)

4.16.2 Conclusions

Groundwater Release Potential: There was a low potential for past releases to soil and groundwater, based on recent soil sampling results indicating that detonation event by-products, specifically metals and reactive components, have not accumulated in the soil over time. There is no potential for ongoing releases to soil and groundwater as the unit is inactive.

Surface Water Release Potential: Recent soil sampling results have indicated that by-products from the detonation events, specifically metals and reactive components, have not accumulated in the soil over time. Based on this, there was a low potential for past releases to surface water via runoff.

Air Release Potential: The specific composition of the detonated wastes and completeness of the detonation reactions are unknown. Air monitoring data for the detonation events is also unavailable. Therefore, the past air release potential cannot be adequately evaluated. There is no ongoing potential for air releases as this unit is inactive.

Subsurface Gas Release Potential: There was a low potential for the past generation of subsurface gas based on recent soil sampling results indicating that detonation event by-products, specifically metals and reactive components, have not accumulated in the soil over time. As this unit is no longer operational, there is no ongoing potential for the generation of subsurface gas.

4.17 DRUM RINSING AREA

4.17.1 Information Summary

Unit Description: A drum rinsing area, identified in an EPA Inspection Report, was located in the Surface Impoundment 317 area.(3) Details on this unit's construction and operation were unavailable at the time of this review. The area used for drum rinsing could not be specifically identified by Whittaker representatives during the VSI. The general area consisted of bare soil, with no signs of staining to indicate recent activity.

Date of Startup: The startup date for this unit is unknown.

Date of Closure: It is unknown when this unit was taken out of service.

Wastes Managed: The specific types of wastes generated by this unit are unknown.

Release Controls: The release controls for this unit are unknown.

History of Releases: No information regarding release was available.

4.17.2 Conclusions

There is not enough information available at this time concerning the construction and operation of this unit to adequately evaluate the environmental releases potentials of this unit.

4.18 TRANSFER SUMP IN MELT AND POUR PROCESS BUILDING

4.18.1 Information Summary

Unit Description: This unit was located in the melt and pour process building (Building 110) on south end of the facility (Figure 2). The melt and pour process building was used in the 1970's for packaging glass ampules of titanium tetrachloride ($TiCl_4$).(22) The transfer sump was installed during this time to catch broken glass and wash water from rejected ampules.(22) Wash water collected in the sump was transferred to Surface Impoundment 342.(22) The process building had previously been used to for melting and casting high explosives.(22)

Date of Startup: The transfer sump was place into service in the 1970's.(22)

Date of Closure: The building and transfer sump were removed from the site in August, 1986.(22)

Wastes Managed: Broken glass and wash water from rejected $TiCl_4$ ampules were the only wastes collected in this sump.(22) These wastes are not known to be RCRA hazardous wastes or contain hazardous constituents.

Release Controls: Details on release controls were unavailable for this review.

History of Releases: There was no file evidence of releases from this unit. The building and sump no longer exist and could not be observed during the VSI.

4.18.2 Conclusions

Since there were no hazardous wastes or hazardous constituents managed in this unit, there was no potential for releases to soil, groundwater, surface water, air, or for the generation of subsurface gas.

4.19 RINSE WATER TANK

4.19.1 Information Summary

Unit Description: This tank was used to store rinse water generated from x-ray operations.(20,22) The unit was located on northeast end of the facility adjacent to Blending Road.(20) Wastes were stored in the tank for less than 90 days.(20) Contents of the tank were either trucked offsite or routed to a POTW.(22)

Date of Startup: The unit was placed into service in about 1984.(22)

Date of Closure: The tank became inactive in 1986.(22) It is no longer present at the facility.

Wastes Managed: The x-ray water was reclaimed for silver prior to discharging into the tank.(22) These wastes are not known to be RCRA hazardous wastes or contain hazardous constituents.

Release Controls: The tank was situated on a diked concrete pad.(20,22)

History of Releases: There was no file evidence of releases from this tank. The tank is no longer present at the facility; thus, it was not observed during the VSI.

4.19.2 Conclusions

Since there were no hazardous wastes or hazardous constituents managed in this unit, there was no potential for releases to soil, groundwater, surface water, air, or for the generation of subsurface gas.

5.0 CONCLUSIONS

A RCRA facility assessment (RFA) was performed to identify and evaluate solid waste management units (SWMUs) at the Whittaker Corporation, Bermite Division, ordnance manufacturing facilty near Saugus, California. The RFA utilizes a records review, data evaluation, interviews, and a visual site inspection to evaluate the potential for releases of hazardous constituents to the environment from SWMUs identified during this assessment. The visual site inspection was performed on July 16, 1987.

The Whittaker Corporation has been active at this site since October, 1967, manufacturing a wide variety of ordnance products for the Department of Defense. The facility, however, ceased operations in 1986 and began undergoing closure of waste management units. As of August, 1987, approximately 95% of the structures on the site have been demolished. The only structures remaining on site are the administrative buildings and RCRA-regulated storage and treatment units which have been emptied and cleaned.

A total of 34 SWMUs were identified and evaluated at the Whittaker facility in the course of this assessment. These SWMUs are shown on Figure 2 and listed below:

Unit 4.1 Lead Azide Wash Water Treatment System - RCRA Regulated (Four Tanks

Unit 4.2 Lead Azide Wash Water Holding Tank

Unit 4.3 Old Lead Azide Processing Building and Sump (Two Units)

Unit 4.4 Surface Impoundment 317 - RCRA Regulated

Unit 4.5 Tank Farm (Three Tanks)

Unit 4.6 Drum Storage Unit (Near Building 317)

Unit 4.7 Surface Impoundment 342 - RCRA Regulated

Unit 4.8 Drum Storage Unit (Near Building 342)

Unit 4.9 Three Steel Portable Magazines - RCRA Regulated

Unit 4.10 Three Wooden Portable Magazines - RCRA Regulated

Unit 4.11 Waste Pyrotechnic Magazine (Building 236) - RCRA Regulated

Unit 4.12 Waste Pyrotechnic Magazine (Building 223) - RCRA Regulated

Unit 4.13 Burning Cage, Pans, and Rails - RCRA Regulated (Three Units)

Unit 4.14 Two Former Burn Pits - RCRA Regulated

Unit 4.15 Three Open Burning Area Storage Bunkers

Unit 4.16 East Fork Detonation Range - RCRA Regulated

Unit 4.17 Drum Rinsing Area

Unit 4.18 Transfer Sump in Melt and Pour Processing Building

Unit 4.19 Rinse Water Tank

Lead Azide Wash Water Treatment System (Unit 4.1)

Based on the unit's construction, secondary containment, and operational precautions taken to prevent spillage, there was a low potential for releases to soil, groundwater, and surface water when the unit was active. Inorganic wastes were managed in this unit, so there was no potential for the generation of subsurface gas. The tanks in this system were open-topped, so air releases were likely to have occurred by evaporation. The tanks have been emptied and cleaned, so no ongoing release potentials exist.

Lead Azide Wash Water Holding Tank (Unit 4.2)

The specific characteristics of wastes managed in this unit are unknown. If the unit managed hazardous wastes or contained hazardous constituents, there was a potential for releases to soil, groundwater, surface water, and air, as the holding tank had inadequate release controls. Based on the inorganic nature of the wastes potentially present in the tank, there was no potential for the generation of subsurface gas. The unit has been removed from the site so no ongoing release potentials exist.

Old Lead Azide Processing Building and Sump (Unit 4.3)

The sump was designed for releases to soil, and as such, created a potential for release to groundwater. It is unknown if the sump was covered so the air release potential cannot be evaluated. Based on the sump design and proximity

to surface water, the release potential to surface water was low. Inorganic wastes were managed in this unit, so there was no potential for the generation of subsurface gas. The sump was destroyed in an explosion resulting from waste accumulation. The area was subsequently cleaned and backfilled. Soil samples were also collected in the sump area and in the drainage area below the sump, although the analytical results indicated that no lead contamination had occurred. There is no ongoing potential for releases since the unit no longer exists.

Surface Impoundment 317 (Unit 4.4)

Results of soil sample analyses have indicated that there has been soil contamination resulting from previous use of the surface impoundment for spent solvent storage. The presents of contaminants in soil creates a potential for releases to groundwater, surface water via runoff, and for the generation of subsurface gas. This unit was designed for air releases by evaporation. The facility has submitted a soil characterization plan, hydrogeologic assessment plan, and groundwater monitoring plan for this impoundment to EPA and DOHS to determine the extent of contamination and to evaluate closure options.

Tank Farm (Unit 4.5) and Drum Storage Unit Near Building 317 (Unit 4.6)

Based on the construction, release controls, and operating conditions of these units, there was a low potential for releases to soil, groundwater, surface water, and air, and for the generation of subsurface gas. Both of these units no longer exist, so there is no ongoing potential for releases to the environment.

Surface Impoundment 342 (Unit 4.7)

There was a low potential for releases to soil, groundwater, and for the generation of subsurface gas from this unit, based on the design and operation of this impoundment. Some air releases were likely to have occurred by evaporation. The surface impoundment has been closed so there is no ongoing potential for releases. A soil characterization plan and hydrogeologic assessment plan have also been submitted for this unit to EPA and DOHS to determine if any contamination has occurred.

Drum Storage Unit Near Building 342 (Unit 4.8)

The unit's containment wall was equipped with outlet pipes to allow for drainage of the storage unit during rainfall events, thus creating a potential for releases to soil, groundwater, and surface water. During dry weather, the drum storage unit was adequately contained to prevent releases to the environment. There is no ongoing potential for releases, as this unit no longer exists.

Waste Storage Magazines (Units 4.9, 4.10, 4.11, 4.12, and 4.15)

All of the storage magazines used onsite had a low potential for releases to soil, groundwater, surface water, air, and for the generation of subsurface gas, based on the construction of these magazines, secondary containment of the wastes, and waste handling precautions taken to prevent spillage. These magazines have been emptied and cleaned, so no ongoing release potentials exist.

Burning Cage, Rails, and Pans (Unit 4.13) and Former Burn Pits (Unit 4.14)

Soil sampling has been conducted in these areas to determine if hazardous wastes or constituents have accumulated in the soil over time as a result of these burning activities. Based on the results of these soil analyses indicating that no accumulation has occurred, there was a low potential for releases to soil, groundwater, surface water, and for the generation of subsurface gas from these burning activities. However, some of the wastes burned in these units may possibly have released toxic fumes to air. These units are no longer operational, so there are no ongoing release potentials associated with these units.

East Fork Detonation Range (Unit 4.16)

Soil sampling has also been conducted in this area to determine if detonation event by-products have accumulated in the soil over time. Result of the soil analyses have indicated that metals and reactive components have not accumulated in the soil. Based on these results, there was a low potential for releases to soil, groundwater, surface water, and for the generation of subsurface gas from these detonation events. The detonation range is inactive, so there are no ongoing release potentials for this unit.

Drum Rinsing Area (Unit 4.17)

There was not enough information available at the time of this review concerning the unit's construction, release controls, and waste handling practices to adequately evaluate the environemental release potentials.

Transfer Sump (Unit 4.18) and Rinse Water Tank (Unit 4.19)

These units were not known to manage hazardous wastes or contain hazardous constituents, therefore, there were no release potentials associated with these two units.

6.0 SUGGESTIONS FOR FURTHER ACTION

A RCRA facility assessment was performed at the Whittaker Corporation, Bermite Division facility near Saugus, California. During the course of this assessment, 34 solid waste management units were identified and evaluated for their environmental release potential of hazardous wastes or constituents. Suggestions for further action for these SWMUs identified at this facility are as follows:

- Additional information should be obtained regarding the construction and management of the Drum Rinsing Area (Unit 4.17) in order to adequately evaluate the environmental release potentials from this unit.

- Additional information should be obtained regarding the use and operation of the lead azide wash water holding tank (Unit 4.2) to better characterize the types of wastes managed in this unit. Based on this information, soil sampling in this area may be warranted to determine if contamination has occurred.

- Past releases from Surface Impoundment 317 (Unit 4.4) are currently being addressed in the facility's soil characterization plan, hydrogeologic assessment plan, and groundwater monitoring plan. No further actions outside the scope of these plans is required at this time.

- Possible releases from Surface Impoundment 342 (Unit 4.7) are also currently being addressed in the facility's soil characterization plan and hydrogeologic assessment plan. No further actions outside the scope of these plans is required at this time.

- Possible releases from the drum storage area near Building 342 (Unit 4.8) have occurred as a result of drainage of the unit during rainfall events. The exact location where this drainage occurred should be identified to determine if this area has been addressed in the facility's soil characterization plan for Surface Impoundment 342. If this area has not been addressed in the plan, additional soil sampling may be warranted to determine if contamination has occurred from the use of this drum storage unit.

- The lead azide treatment system (Unit 4.1), steel magazines (Unit 4.9), wooden magazines (Unit 4.10), Building 236 (Unit 4.11), Building 223 (Unit 4.12), burning cage, pans, and rails (Unit 4.13), former burn pits (Unit 4.14), and the east fork detonation range (Unit 4.16) are all addressed in the facility's revised RCRA closure plan. No further actions are suggested for these units at this time.

- No further actions are suggested at this time for the old lead azide processing sump (Unit 4.3), tank farm (Unit 4.5), drum storage area near Building 317 (Unit 4.6), transfer sump (Unit 4.18), or rinse water tank (Unit 4.19).

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Appendix A

SUMMARY TRIP REPORT AND VSI PHOTOGRAPHS

SUMMARY TRIP REPORT

A visual site inspection (VSI) was performed at the Whittaker Corporation, Bermite Division facility near Saugus, California on July 16,1987. The weather was sunny and dry, with temperatures in the upper 90's. The winds were mild. Janice Wenning and Jill Kiernan of the A.T. Kearney Team, inspected the facility and conducted personal interviews with John Peloquin, Consultant for the facility, and Glen Abdun-Nur, an employee of Whittaker. Michael Fernandez representing EPA, Region 9; Alan Sorsher, representing the California Department of Health Services; and Larry Peterson of the California Regional Water Quality Control Board, Los Angeles Region; also participated in the facility site inspection.

The inspection commenced at 9:00 a.m. in the conference room at the facility. Agency staff explained the purpose of the VSI to the facility representatives. The A.T. Kearney Team the interviewed the facility representatives regarding the history, operational procedures, and waste management practices of the Whittaker facility. Following the discussion, a site tour of the facility was conducted. All SWMUs identified in the preliminary file review and still remaining at the site were inspected.

The site tour, which was completed in approximately three hours, was followed by a debriefing meeting. The A.T. Kearney Team asked questions of the facility representatives to confirm or clarify information obtained during the site tour. Agency staff then explained the next stage of the assessment to the facility representatives.

Appendix B

VSI FIELD NOTES

Whittaker
Bermite Div.
7/16/87

Janice Wenning	SAIC	415-960-5922
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GLEN ABOUN-NUR	BERMITE	805-259-2241

Whitta Ker 7/16/87

Glen Abner

Gordon Louttet – Director of Environmental Affairs

Norm Wenck – consultant for closing the facility

John Peloquin - not comfortable with proving info - on such short notice & w/out Gordon present

400 Buildings on site – most gone now
1100 acres on site

Aereal Photo – 1979

(2) Lead Azide

Prior to 1978 – process was located in another area – Unit #14
lead azide ½" drop test

Processes are actually stabilization to render un explosive
Very dangerous process – wastes trucked off or to tank farm & trucked off

Boat hull unit – used before for overflow / rainwater in that area taken out last year.

Soil samples have been taken underneath pad
wipe sampling has also been done

* Look at containment

(3) E. Fork Detonation Range

- Used to detonate waste off-spec explosive components
- 50' × 20'
- Packed in paper containers loaded into shallow holes at a depth of less than 6 feet. a small booster charge was loaded w/ components and hole filled w/ soil. a series of 3 holes were loaded & filled at same time w/ no hole exceeding 10 pounds of

net explosive weight, Material was detonated remotely.

DOD : ~1970 — ~1985
Prior to 1970 — some stockpiling, some burning
went to Fort Erwin

Some soil sampling — no excavation — see Closure Plan.

(4) Portable Magazines -
Steel 502, 504, 506
Stored off-spec, trimmings etc. — temporary — prior to burn cage or off-si
↳ wastes were containerized — property of reactivity

- lined with plywood
- 16 × 8 × 7
- Off-spec flare mix, rocket propellant, BP-1 powder — (Mg containin

Wood
- 8 × 14 × 10 high, 10 × 10 × 9 high, 8 × 12 × 8 high
- stored in bags in ammo cans
- stored prior to burning in burn cage or shipment to HW facility
- off spec flare, rocket mix, rocket propellant, BP-1 powder

Burning until 1/9/86

Put into service when RCRA went into effect — although probably before that time

Stored after 1/9/86 — stacked piled & shipped offsite to Louisianna

Burning period — storage period varied — wks to months

All magazines still remaining on site
Steel ones have been sold

Formulations - mixing, grinding, blending
no chemicals produced

⑤ Storage Magazines - Building 226

- Building was storage only
- Stored days to years
- Wastes burned until 1/9/86 - then offsite disposal
- Closure activities complete as described in plan - awaiting DOHS approval to disposition building

- 40' x 20' x 12' high
- concrete block structure - store dry waste propellant
- contained in bags & packed in ammo cans or fiber drums.
- off spec flare mix, BP-1, powder, rocket propellant (Mg)

- DOD - predated RCRA

⑥ Building 223

- Two section building 21 x 40.5 x 14' high
- DOD - when burning ceased
- fiber drums - gloves, etc. in Valstat bags (conductive plastic - no sparks) glove & paper lab flare mix, rocket propellant, BP-1 powder doubly contained in bags & fiber drums
- wood frame - corrugated metal - concrete floor - overhead & pedestrian doors
- burned or shipped to HW facility
- at time of closure - shipped to R & D Fabricating & Manuf. Div. in Colfax, Louisiana for treatment - Aug '86 - April '87
- Same comments as in #5

⑦ Drum Storage Unit - near 317

12' x 12' - four pots - wood or corrugated roof open on all sides staging area or collection station where 55 gallon drums could be staged - drums collected until waste specialist could disposition them
1960 (mid) to Feb 1987, when removed

Soil charact. of both impoundments in Closure Plan

- Concrete pad - not sure of
- wastes could have been anything - drums probably not labelled correctly - this was specialists job.

(8) Drum Storage Area - 342 - (designated Management Unit #8)

- less than 90 day storage of waste solvents
- pad was poured during summer '83
- 55-gal drums - offsite disposal
- Filtering - various filter cloths cheesecloth - 1 micron synthetic fabrics - solids to R&D in Lous.
- Slab removed 1/6-8/87

- 130 ft x 80 x 6" x 24" containment wall - reinforced concrete
- concrete pad sloped to drainage pipes - capped & open during rainfall - drained outside of wall.
- containers on pallets
- four liquid storage tanks - design cap.

(9) Open Burning Area

- 000 - early 1960s - 1/9/86 - for burn areas.
  cage, pan, rails - 1970s

- Pits were channels - [Nov 86 - March '87]
- rails, pans, cage - removed
- disposition of ash - hauled off-site - don't know details
  not really burns - more of a flash < 2 minutes
- surface soil samples & borings have been taken -

Find info on soil sampling

(10) Waste Solvent SI - 317

- 000 1970's - March '83
- 1 foot trench down middle of pond w/ perforated pipe - sand layer - liner

Aborted Part C –
Revised Closure Plan

- ~ 50' x 50' single cavity - 2-3 deep sloped? liner extended that ~ 3 feet but extended
- * check on
- liner 50 - mil
- wastes pumped out – depends on evaporation rate
- probably pretty strong solvents
- when liner removed - no visible tears, etc.

(11) SI 342

- 50 x 100' – 2 cavity w/ rise in middle - one filled & spilled over to 2nd one
- same lining system as before – completely fenced
- aqueous phosphorus wastes
- box in side of bank
- liner was repaired – due to burning of dried out phosphorus
- DOO – Mid 60 to 1983
  slab in 1983 – fine.
- pump out – off site disposal
- only used for red phosphorus
- liner covered over 3' of side
- see closure plan

(12) Tank Farm (Management unit # 9)

- Pad removed 1/5/87
- Sept/Oct 1986 – tanks were disassembled & removed by buyer
- DOO 3/8/84 – 12/19/85
- less than 90 day storage

(13) Building 41

- 25 x 65' - wooden structure – originally horse stable
- heat pellets for thermal batteries were oven cured in this facility
- DOO 1970 – 6/11/86
- also stored air conditioning parts & equipment for 15 years.
- area trenched in 6/26/87 – 15-20' long x 12' deep dug across septic area
  no visual sign of contamination – Century OVA did not detect organic vapors in soil or trench (detection limit 1 ppm)

(14) Old Ajyde area

- 1978 – personnel fatality – lead azide explosion to Oct 31, 1978
- operated 20 years prior to explosion – closed & moved to new area
- wood frame, wood roof, corregated steel side 12' x 16'
  plywood floor – portable building P-230 or 231 on skids
- handled same as new ajyde area – WW to open bottomed concrete sump – accumulated – resulted in explosion
- 1978 sump cleared out carefully & backfilled
- soil samples taken at sump area & drainage below area taken 4/8-11/86
  lead EP Tox < 0.05 mg/L

(15) Building 6

Nothing in this area – Building removed on 12/2-4/86
Current staff (27) can't remember septic tank in this area – was sand in this pump station area piped to transfer station

- Septic transfer station in front of Building 9 – Sanitary waste is pumped to leach field in back of building 45 these are still in existence

(16) Magazine 14

- wood roof, cement floors 25' x 25' w/ entire complex frame & wood roof covered for weather protection
- no significant activity since 1960 – removed 7/10/86.
- high explosive storage
- soil sample 4/8-11/86 in a very old solid concrete sump 1½" deep & 3¼" deep – found to be non-reactive
- not established that wastes were generated or managed at this location

(17) Old Dynamite Bldg.

- 2 story frame building 25' x 40'
  wood frame – corregated steel sides – all wood floors
- const date unknown – 1930 last used – building removed 8/26/8
- unk. what wastes were generated or managed – used for dynamite formulation does not generate waste – off spec products would be detonated

1962 - 1972 at this particular site

(18) Building 59 Sums - office bldg
- Brick building - ~30' x 30' concrete floor wood roof
- showers & sinks - sanitary wastes discharged to small hole in ground
- open bottom bldg - may or may not have been
- at least 1960 - 12/18/86
- not known to be location where wastes generated or managed

(19) Building 342
- built 1970 - 40' x 60' - concrete block building wood roof
- used less than 1 mo in early 1970's
- processing tank - quick mixing of explosives - used Lexane
- may have contained as holding tank during this prod. period
- date of tank removal unknown
- bldg vacant for 10 years prior to removal in Jan 1987
- no wastes known to be generated, stored, treated, etc at this location

(20) Transfer Basin, Melt & Pour
- took place in bldg 110 bldg was 18' x 42' wood frame w/ corrugated steel siding
- High explosives were melted & cast at this facility
- all wastes had to be removed & detonated
- discontinued in early 1960's
- 1970's bldg used package glass ampules of TiCl4
- small subsurface concrete basin was installed to catch broken glass & wash water from rejected ampules
- water transferred to 342 compound
- TiCl4 was only chemical used there
- entire facility removed in 8/5/86

Survey No haz constit. No release potential

(21) Drum Rinsing area
- Current staff cannot remember any area where drum rinsing took place
- in 317 complex - structure had trough which drained to SI - rocket motor steam cleaning process

John will write up other notes

(22) Building 37 — dry assembly
- Production bldg at least since 1960 – removed 2/19/87
- No wastes generated – electrical bridge wires

(23) Rinse Water Tank
- concrete berm w/ tank (steel)
- Reclaim X-ray soln w/out silver → tank → POTW or possibly offsite
- ~1984 – 1986

SWMU
Not hazardous in H.I.
No release

(1) Whittaker aquired site in oct Nov 1967 → April 3 1987
95% or more for DOD or subcontractors
5% commercial

Last 5 years 82-87:
- IR Flares constituted most of business – v. dangerous operations
- personnel # fluctuated w/ involvement in war.
- electrically activated gas generater – detonators, primers, cutters
- never explosives as in bombs – but rocket motor propellants photoflash bombs, flash flares

Before Whittaker – Bermite owned by 2 people, Lisa
- dynamite
- aerial fireworks

Whittaker 7/16/87

John J. Peloquin — once a/ Whittaker (25 yrs) until 11/86
as health & safety officer now consultant
Glen Abdun-Nur — employee

Not avail for meeting
Gordon Louttet — Mg. of Env. Affairs
Norm Wencke — Consultant for closing of facility

Barb talked to Gordon Louttet
2 people present, but unaware of Barb's conversation.

John P. — very uncomfortable w/ans. all questions for factual detail — less than 1 week to prepare —

Most plans thrown out — only plans in closure plan and retracted Part B application

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(2) 4.1 14.2 prior to 1978 — these wastes were generated somewhere else (old azide area 4.15.2)

disposal methods prior to 1978: 1. pump out & off site disposal
2. Transfer to tank farm & off-site disposal

closure discussed in revised closure plan (4/87)

- hull mold is suspected as a ~~sa~~ catch basin but John P. feels was never used for that purpose — after an explosion — the stainless steel tanks were installed —

boat hull tested - never found anything
steel tanks still on-site — soil samples
out for analysis
soil samples were taken from within berm areas of fish water tanks

(3) East TAK Detonation Range

- See revised closure plan (John provided copy doesn't address types of wastes or descrip. quants.
- used to detonate off-spec explosive wastes
- 50' long x 20 wide - depth = <6'
- a small booster charge was loaded with off-spec components & hole filled w/soil - series of 3 holes filled w/no boole exceeding 10 lbs of explos. weight. then material denoted remotely
- At least starting 1970 to ~1985

→ Soil samples taken showed no hazardous waste materials or contamination

(4) Porable Magazines

- solid steel - still on site - lined w/plywood dbl locks - in closure plan.
  16' x 8' x 7' high

used to store off-spec materials until deposition — all stored as containers as if they were to be shipped - usually by DOT regulations.

- most were reactive (some primers)

steel Magazines identical to those used to store explosive manufact. materials and products throughout site. These 3 mags. designated for haz. waste storage
steel port. magazines have been sold.

(4) Portable Mags

3 portable wood mags. used to store dry off-spec flare mix, BP-1 powder & rocket propellants — along Lower Magazine Rd,

8' x 14' wide x 10' high
10' x 10' x 9'
8' x 12 x 8'

wastes stored in bags inside ammocans "confident of no spillage of wastes due to explos. nature wastes stored here prior to burning in burning cage or shipment to licensed hazy. waste facil

1/9/86 quit burning, the wastes were piled up in these magazines —

finally found site in Louisiana for disposal.

when burning was allowed — not much was accumulated — varied some - depending on material & contracts - some materials went directly to burning

all wood mag. - still on-site - RCRA regulated

(5) Waste Pyrotechnic Storage Mag - (236) operated prelated of RCRA

4.6 Still exists
stored dry waste propellants Storage mag.
40' L x 20' w x 12'
concrete block structure
material in bags in ammo cans or fiber drums
these materials treated as hazy. waste
{ off-spec flare mix
{ BP-1 powder
{ rocket propellants
mostly burned onsite until 1/9/86 — then off-site

closure plan activity complete w/rese
awaiting approval to disposition of

(6) Building 223

4.7 wood frame, corrugated metal side
floors & overhead doors & normal pedes
21'L x 40.5'W x 14'
stored fiber drums which conta
bags of dry explosively contaminat
wipe rags - from prod. process
paper & gloves contaminated w
rocket propellant or BP
waste dbl. contained in bags &
materials burned — bld. lice
waste facility
after burning stopped
shipped to R&D Fabricating and
Inc. in Colfax Louisiana

All wastes shipped to LA from

Burning had to be approved
- humidity & air pollution had

(D) Drum Storage Unit (Area 317)

4.6 This unit was 12' x 12' — wood & corrugated roof open on all sides — 4 posts - concrete pad just a staging area or collection station where 55 gal drums could be staged.

Drums collected here until waste specialists could disposition them.

present since mid-60's — removed 2/87

No waste managed at this location.

Not over former waste solvent surface impoundments

The 4.8.1 description presented in report is more descriptive of Bld. 342

(E) Bld. 342 - drum storage
4.9 130' x 80' with 6" x 2' containment wall
concrete pad reinforce steel
over old phosphorus surf. impoundments
Not a Haz. Waste facilities

all containers on pallets to prevent contact
Containment capacity = 155,594.8 gals

pad poored in 1983 — was never used as a "RCRA storage unit" (never more than 90 days) however drums stored here temp. 155 gal

Solvents here: hexane, cyclohexane, MEK, acetone

Slab removed 1/6-8/87
solvents various filter cloths cheese cloth → 1 micron
synthetic fabric.

Solids shipped to R&D in Louisiana

filtered thru

⑨ Open Burning — See closure plan

quit 1/9/86 — started burning in early 1960's
Two Formed Burn Areas)

4.11 Cage, pans and rails used in early 1970's replaced open burning — in about same general area

4.10 burn areas were covered w/ 2-3' of soil in late 1983.

rails were picked up for scrap 11/86 - 3/87
and pans & cage

don't known what happened to ash from burn (not much ash generated per burn) — ash hauled off — don't know where

burns more like a flash — very quick < 1 min.

24 soil samples taken recently in burn area results not back yet

(10) Former Surf. Impd. 317

4.12 Started up in 70's removed 3/83 — in operation at least 10 yrs
not sure maybe

trench on bottom w/ perfor. line 4" PVC → collection b/K.
covered w/ sand, gravel
liner

Smaller than 342 (100'x~~?~~50')
maybe 50'x50' — 2-3' deep
slope not very great - don't know exactly
liner 30 or 50 ~~mils~~ thickness — pulled over
3' on top of impounds — liner never replaced
pg. 90 of closure plan describes soil sampling

Solvents from 317 were pumped out if inflow exceeded evaporation

if production down — not pumped out.

suspect fairly high concentrations

When liner removed — no leaks or damaged ~~noted~~ noted

(11) Surf. Impd. 342

4.13 50'x100' — 2 cavity — w/ overflow in center
— gravel/sand packed pipe — w/ hypalon liner
completely fenced

Water & lines from phos. operation.
concrete box on outside of bank at end of pipe for leak detection.
in operation 15-20 yrs before 1983 when cement slab poured

red phos. brought in - treat to remove white phos. → waste material was slightly acidic
added caustic → with elemental phos,

if red phos. kept wet ok - if dry out spontaneous rx to air.

often ~~white phos~~ phos. would dry on side of pond - if water level got to low, phosph. dry out - would smolder and burn liner

liner was repaired NOT replaced

liner had 3' lip around impoundment
have done soil sampling

June 1983, liner taken out, samples bored, Pad poured within a couple of months

(12) TANK Farm

4.14 Pad removed 1/5/87
Sept - Oct/86 TANKS disassembled and removed by buyer.

operation 3/8/84 - 12/19/85

Storage < 90 days - only used couple of times

bad design, - tanks were bolted together, not solid seam

(13) Bld. 41 Sump + Cesspool

4.15.1 ↳ use to be a stable 25' x 65'

- heat pellets for thermal batteries were oven cured
- no active use since 1970
- last 15 yrs. used for maintenance, storage of aircraft

septic Sys. removed 6/11/86

a trench 15-20' long by ~12' deep was dug across expected specific area
No visual sign of contamin.

Century OVA did not detect organic vapors in soil or trench.
Never did soil samples - site leveled

(14) Old Azide Area

4.15.2 Explosion in 10/31/78 killed worker (lead azide)

operations for 20 yrs prior to this closed after explosion - process moved to new site

wood frame, wood roof corrugated steel sides 12'X16' probably plywood floor

Wastes disch. to open bottom concrete sump (this was where explosion was)

For safety purposes the sump was cleaned out very carefully & backfilled.
Soil samples taken at sump area and drainage below area taken 4/8-11/86 showed Pb EP toxic <0.05 mg/l

wash water went to sump – not aware of tank
portable bldng w/sink for washing materials

(15) Bld. 6 – Septic Tank

4.15.3 Never had septic tank at this pt.
a sink in the bld. went to a transfer
station – a little ways away

↳ Transfer station still in operation
Services employee rest rooms.

↳ In front of Bld 9

Sanitary waste then pumped to leach field
in back of Bld. 45

Bld. 6 removed 12/3-4/86

(16) Mag. 14

4.15.4 Block Bld., w/wood roof, cement floors
25' x 25' aperture complex frame & wood
roof covered for weather protection

Nothing sign. here since 1960s

Not determined whether wastes were generated
or managed at this Bld. If any activity
would have involved high explosives.

Soil samples taken (4/8-11/86) in a very old solid concrete sump
1½" deep + 3¼" deep – total depth – non reactive
bld. rem. 7/10/86

Bermite first started
1902 - 1912

(17) Old Dynamite Bld.

NOSMWU

4.15.5 2 story frame bld. 25'x40'
wood frame - corrugated steel sides - all wood floors

Not used since 1930s - unk. construct. date
(Hoover Dam)

Unk * wastes generated - Dynamite formulation does not generate wastes ↳ Nitroglycerine sensitized

off-spec product would have be detonated

Bld. removed 8/26/86

(18) Bld 59 Sump

4.15.6 Brick 30'x30' concrete floor and a wood roof - engineering office
shower w/ sinks → discharged to sm. hole in grd. - maybe lined w/ brick or wood - open pit

operation ~1960 at least to 12/18/86 when removed

Never known to be a location for wastes generated

(19) TANK in Bld. 347

4.15.7 constructed ~ 1970 - concrete block, wood roof. 40'x60'

tank for hexane - carry to mix chemicals used for < 1 month for quick mixing of material

tank probably stainless steel — date of removal unk

Bld. vacant ~~for~~ at least 10 yrs
removed 1/1987

No waste gen. or stored

(20) Transfer Basin Sump, Melt, Pour

4.15.8 process in Bld. 110 18'x42' wood frame w/corrugated steel siding. — High explosives melted & cast at this facility

wastes removed & detonated

Operation discontinued in early 1960s

1970s - Bld used to package glass ampoules of $TiCl_4$ (titanium tetrachloride.

Sm. subsurface concrete basin was installed to catch broken glass, wash water from rejected ampoules

water transfered to 342 compound.

$TiCl_4$ only chemical used

Bld removed 8/5/86

(21) Drum Rinsing Area in 317 complex

4.15.9 Safety shower

did not wash drums — washed or did something rocket motors — a concrete trench to Surf. Impd.

(22) Bld. #37

4.15.10
No SWMU

Production Bld. at least since 1960
in operation until removed 2/19/87
for dry assembl.

(23) Rinse Water Tank

4.15.11

X-Ray lab - reclaimed Ag - only in operation a couple yrs - ~~about~~ with in last 3 yrs

reclaimed x-ray water stored in tank then probably went to POTW and maybe went off site - not sure

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Whittaker Oct/Nov 1967 aquired facility
operated until 4/3/87

- 95% or more DOD or subcontractors
- 45% commercial

last 5 yrs (82-87) IR flares were majority of business (infrared)

other: Squibs
electroactivated cutters
propellants & rocket engines
↳ oxidizer & a fuel (varied as to type)
Never explosives as an explosive

practice bombs
photo flash bombs
illuminate flares

owned by 3 person partnership before Whitakes

before Whittaker

- aerial fireworks
- dynamite